



CALIFORNIA
High-Speed Rail Authority

2019



Delivering High-Speed Rail to Californians

Project Update Report to the California State Legislature



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The California High-Speed Rail Authority (Authority) is responsible for planning, designing, building and operating the first high-speed rail in the nation. California high-speed rail will connect the mega-regions of the state, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands. When it is completed, it will run from San Francisco to the Los Angeles basin in under three hours at speeds capable of exceeding 200 miles per hour. The system will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations. In addition, we are working with regional partners to implement a statewide rail modernization plan that will invest billions of dollars in local and regional rail lines to meet the state's 21st century transportation needs.



PHOTO: BUILDING STRUCTURAL FRAMEWORK
AT THE SAN JOAQUIN RIVER VIADUCT

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ARCHWAY CONSTRUCTION BEGINS ON THE SAN JOAQUIN RIVER VIADUCT. THE ARCHWAY SERVES AS THE NORTHERN GATEWAY TO FRESNO.

LETTER FROM THE BOARD CHAIR

California's High-Speed Rail project is at a crossroads, and this 2019 Project Update Report lays out how the Authority plans to move the project forward in the months and years ahead.

For years, the idea of a high-speed rail line connecting the two most populous regions of the state, through the Central Valley, was championed by political and civic leaders. Then, after a vote of the people, a project was put forward and carried out by Republican and Democratic administrations. That project, California High-Speed Rail, has created tens of thousands of jobs, supported hundreds of small businesses, contributed to \$3 billion in wages and \$7.6 billion in economic output – much of it in the Central Valley. Voters approved the project because it was our best – and perhaps only – chance to connect Northern and Southern California in an environmentally sound way.

But any assessment of the history of this project underscores the deeply entrenched challenges that it has faced. The initial cost projections and timelines were simply unrealistic. In 2008, voters were told the project would cost \$45 billion. Now, the actual cost appears closer to \$80 billion. The federal government chose that the project begin in the Central Valley nearly a decade ago when it deemed that segment worthy of federal funding.

Having spent more than a decade and billions of dollars, high-speed rail is under construction – progress you can see throughout the Central Valley. And in this document, you will find a report that focuses the limited resources the state has identified to get a working section that can demonstrate the viability of the broader project.

Some have suggested the state should walk away from the more than a decade of collaboration and progress



that Republican and Democratic administrations and a generation of legislative leaders have made to bring the project this far. Such a path would leave California, having spent \$5 billion, with nothing but lawsuits, job losses and billions of IOU's with nothing to show for our debts.

Given those two options, the path forward is clear. The California High-Speed Rail Authority (Authority) will continue its efforts toward getting a working section completed in a responsible and transparent way.

Already, the Newsom administration has made the project more transparent and accountable to the people of this state. During his first month in office, the Governor demanded change orders, cost overruns and travel expenses be made publicly available and

published on the high-speed rail website. In his May Budget Revision proposal, the Governor will announce that critical oversight and management functions will be brought back in-house, replacing consultants with state staff. The Authority will also initiate an office-by-office review of other functions more appropriately performed by state officials -- not private consultants.

In keeping with that commitment to transparency, this update estimates the cost for the Bakersfield-Fresno-Merced section, regional bookend investments and Phase I (San Francisco to Anaheim) environmental clearance at \$20.4 billion, all while acknowledging that -- as with any major infrastructure project -- those costs could rise with unpredictable developments.



This report lays out the path forward for the Merced-Fresno-Bakersfield line, a building block project that matches the available funding. The line will provide a significant economic boost to fast-growing and dynamic parts of our state, anchoring an ambitious economic development vision for rural resilience in the Central Valley.

Further, the Authority is committed to bookend investments in both Northern and Southern California and completion of environmental work for the length of the San Francisco to Los Angeles/Anaheim corridor.

And all of this is done with the goal of delivering a working section, demonstrating the project's feasibility and attracting other funding to complete the line north to south.

Independent, third-party analysis by the Early Train Operator confirms the decision to focus first on the Merced-Fresno-Bakersfield line as the best option to increase ridership and get an operational segment up and running.

That building block approach is what this report details today.

Respectfully,

A handwritten signature in black ink, appearing to read "Lenny Mendonca".

Lenny Mendonca
Authority Board of Directors Chair

About This Report

This is the California High-Speed Rail Authority's 2019 Project Update Report. This report fulfills the Authority's biennial requirement to update the California Legislature on the development and implementation of intercity high-speed rail service.

In July 2012, the California Legislature approved—and Governor Brown signed into law—Senate Bill 1029 (Budget Act of 2012). SB 1029 appropriated almost \$8 billion in federal and state funds to construct the first high-speed rail segments in the Central Valley and to fund 15 bookend and connectivity projects throughout California. SB 1029 also put into place reporting requirements to ensure legislative oversight of the

project. The requirement for a project update report was updated by Assembly Bill 95 in June 2015.

This 2019 Project Update Report provides comprehensive reviews of:

- Progress made on the high-speed rail project since the 2017 Project Update Report;
- Project updates since the 2018 Business Plan; and
- What we learned in the months since the 2018 Business Plan was published.



PHOTO: CEO BRIAN KELLY TOURING A CENTRAL VALLEY CONSTRUCTION SITE.

Inside

Chapter 1, Analysis of Early Service: A review of what the Authority learned after the Early Train Operator (ETO) completed its analysis of the feasibility of two separate high-speed rail lines—one in the Central Valley and another from San Francisco to Gilroy—as candidates for early, interim service. This analysis is a commitment the Authority made in its 2018 Business Plan.

Chapter 2, Capital Cost Review: A summary of what the Authority learned after receiving the results of additional cost estimate reviews and risk analyses. These reviews and analyses, also a commitment the Authority made in its 2018 Business Plan, include an construction cost estimate review conducted by the Early Train Operator, an expanded Monte Carlo risk analysis to determine if the Authority's range-based approach should be updated or further adjusted, and work to further define risk areas and detailed mitigation strategies.

Chapter 3, Funding and Affordability: An overview of the funding that is currently available to the Authority and the funding that is projected to be available in the future compared to our capital cost estimate. This discussion includes the funding available to deliver the scope of work under the federal grant agreement and to meet our commitments to our regional partners for the bookend projects. This chapter also discusses our ability to deliver an interim operating segment in the Central Valley.

Chapter 4, Implementation Plan: A discussion of our policy recommendations to deliver early service in the Central Valley, linking Merced, Fresno and Bakersfield. This intercity service would operate on high-speed rail assets and would integrate with existing regional rail service at Merced and bus connections at Bakersfield.

Chapter 5, Program Issues: A review of the programmatic issues that the Authority continues to monitor and manage including disengagement by the Federal Railroad Administration, our response to the recent State Audit Report, enhancements to our organizational capacity and our mitigation efforts to resolve issues related to right-of-way and third-party agreements.

Chapter 6, Program Risk: An examination of the ongoing programmatic risks that the Authority continues to monitor and manage. These include funding, cost and schedule risk and other risks, and our ongoing risk-management efforts.

Chapter 7, Program and Regional Summaries: A summary of our progress on planning for the Silicon Valley to Central Valley Line and for Phase 1 and Phase 2 of the high-speed rail system. This summary also presents regional summaries of activities in Northern California, the Central Valley and Southern California. The program summary and each regional summary discusses major accomplishments, milestones achieved and milestones to follow.

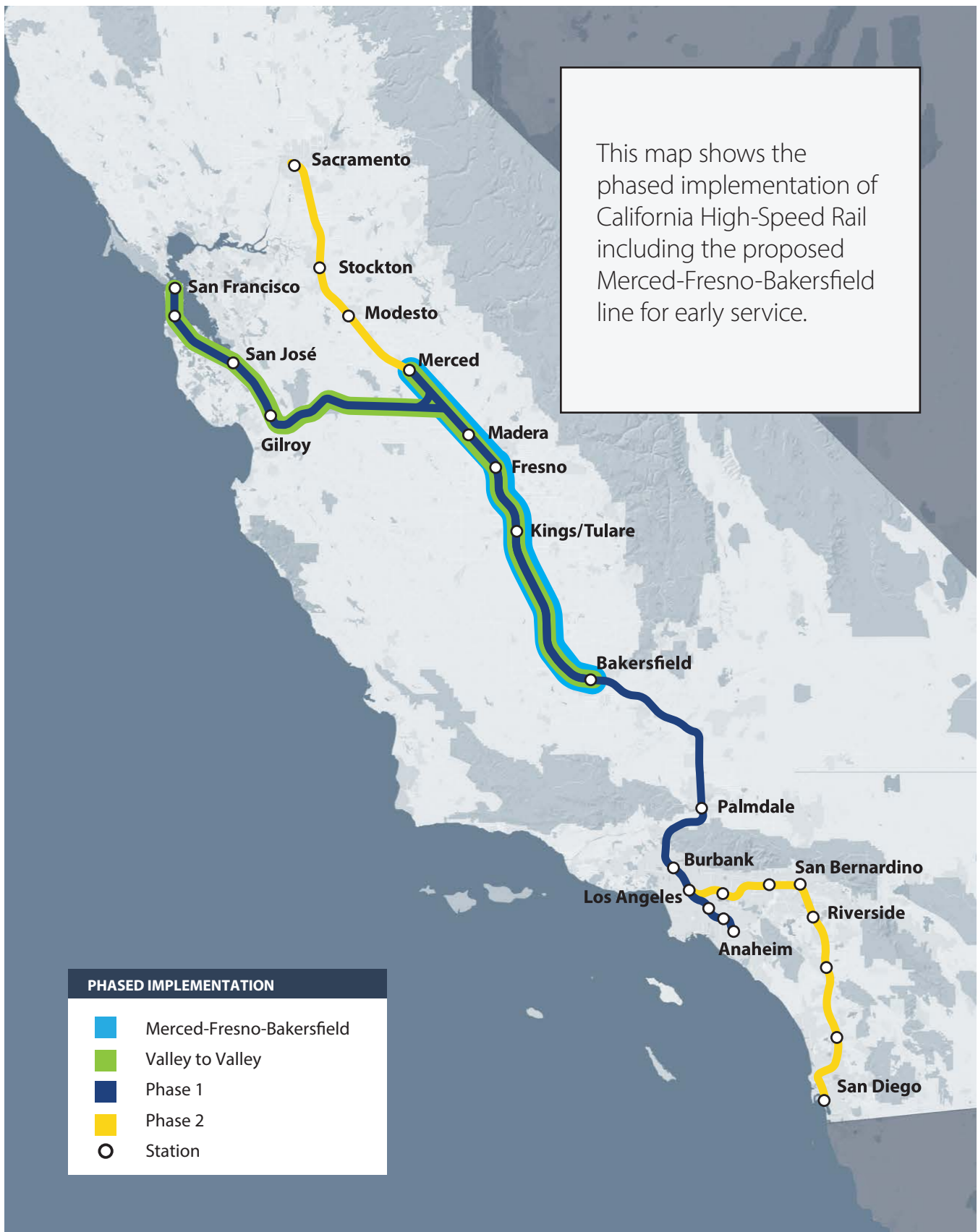


EXHIBIT 1.0: PHASED IMPLEMENTATION MAP



CHAPTER 1: EARLY INTERIM SERVICE ANALYSIS

The 2018 Business Plan identified three key objectives that guide Authority decisions:

- Initiate high-speed rail service in California as soon as possible;
- Make strategic, concurrent investments that will be linked over time and provide mobility, economic and environmental benefits at the earliest possible time; and
- Position ourselves to construct additional segments as funding becomes available.

To achieve this, CEO Brian Kelly stated the Authority's intent to evaluate options to put high-speed rail assets to use that will provide benefits to Californians.

Those benefits would include reduced travel times on existing passenger rail systems, expanded clean electrified rail service and preparation for testing high-speed rail operations.

Both the 2016 and 2018 Business Plans have consistently articulated that service on a Silicon Valley to Central Valley Line (Valley to Valley Line) is the shortest line that would meet the financial requirements to cover operation and maintenance costs. The 2018 Business Plan indicated that this line would take nearly 15 years to complete, assuming the availability of full funding. Given this, the Authority recommended implementing passenger service incrementally, aligned with a "building block" approach to construction.

This has been a subject of discussion with the Federal Railroad Administration (FRA) since 2013. The grant agreements envision passenger service using the Central Valley Segment now under construction. The agreements state that passenger services would be provided either as part of a longer high-speed operational line, such as the Silicon Valley to Central Valley Line, or as a shorter interim service prior to full-scale high-speed rail operations. Any early passenger train service would be interim until funding is available to complete the Silicon Valley to Central Valley Line.

The CEO asked the Early Train Operator (ETO) to complete an analysis of two separate potential interim early service building blocks within the Silicon Valley to Central Valley Line—one within the Central Valley and another from San Francisco to Gilroy. The purpose of this analysis was to determine the costs and early passenger service benefits.

DB Engineering and Consulting USA (the United States arm of Deutsche Bahn AG, the entity that runs high-speed rail in Germany) was selected to be the ETO and placed under contract in late 2017. The ETO is assisting the Authority with planning, designing and implementing the nation's first high-speed rail program. The 2016 Business Plan articulated the Authority's desire to engage an ETO to seek its perspective is considered in the planning and design of track, systems, high-speed trains (rolling stock), and stations. Engaging an operator in early decisions on safety, operations, equipment and systems, fare structures and schedules, as well as other commercial and operating elements will ensure that the system is designed to operate as a safe and successful enterprise.

The ETO completed its initial work; going forward, additional service and financial analysis on interim services will be necessary. Specifically, financial reviews in past Business Plans consistently treated the

revenues and costs of the high-speed rail operations as a stand-alone business for purposes of determining a revenue-neutral operational segment. Historically, this analysis has not considered the additional net revenue that may be generated from the possible use of high-speed rail capital assets by others or from revenue sharing agreements derived from joint ticketing of integrated services, such as a journey starting on Amtrak and then continuing on high-speed rail.

History of Interim Service

In parallel with the funding history described in **Chapter 3, Funding and Affordability**, implementation strategies for California's high-speed rail system also evolved over time. Once the Authority secured federal funds through the Federal Railroad Administration's ARRA and FY 10 grant programs, the high-speed rail program changed from a planning-only organization to an organization that included both planning and construction of elements necessary to eventually operate a high-speed train system.

Although the different strategies reordered sequencing priorities, one idea remained constant: implementing the high-speed rail system in phases. From the Revised 2012 Business Plan to this 2019 Project Update Report, the Authority has always considered an interim passenger train Central Valley service plan. That is because, without full funding to complete an operable segment, there could be a period during which a Central Valley interim service is necessary to make use of the infrastructure that has been built, avoiding "stranded assets" and, more importantly, to provide the most valuable early passenger train service benefits for the State of California.

Of course, these assets will be suitable and ready for Authority high-speed rail operations once the Central Valley is connected to the Silicon Valley. However, the Authority has always contemplated that, as the civil infrastructure advances in the Central Valley, there might be a decision point, based on an assessment of available funding, on whether to make Central Valley interim passenger service decisions. The grant agreement has historically included language to this effect. The Authority now finds itself at that decision point.

2012 Business Plan

In 2012, the Legislature appropriated both Proposition 1A and federal funds for the 119-mile Central Valley construction. The Authority divided the construction into three design-build contracts for the civil infrastructure that could be used by intercity passenger rail in the near term and, eventually, would be used by an Authority-operated high-speed rail system. At that time, the first initial operating section (IOS) was defined as the shortest, non-subsidized high-speed rail line that could be operated by the Authority.

The Revised 2012 Business Plan identified two potential initial operating segments (IOS):

- IOS-North from Bakersfield to San José; and
- IOS-South from the Central Valley to the San Fernando Valley.

The Central Valley was part of both the IOS-South and the IOS-North. IOS-S was identified as the preferred implementation strategy by the Board of Directors. This implementation strategy could be realized only if significant additional funding was secured. Only

approximately \$6 billion in construction funds were secured, but the total estimated cost range for IOS-S was \$27- \$31 billion.

A phased approach to system development was described as the prudent course to build a foundation that allows for greater efficiency in the use of private investment once the initial segments of the system are in place. Private sector operation was envisioned at that time and is envisioned now. As part of phased implementation, the assets built in the Central Valley could be used by an interim passenger train operator until additional funding became available. This approach was memorialized in the federal grant agreements. Specifically, the diesel San Joaquin intercity passenger trains, which operate on shared freight rail tracks, could be shifted to the high-speed rail tracks to realize a reduced passenger train travel time in the Central Valley between the termini of the assets built.

2014 Business Plan

The 2014 Business Plan identified hope for additional funding because Governor Jerry Brown submitted his 2014-15 Proposed Budget to the Legislature, proposing to invest Cap-and-Trade proceeds to help fund the program. The first IOS was still defined as IOS-South from the Central Valley to the San Fernando Valley. At that time, design and construction work was underway on the first segment of IOS-South in the Central Valley.

The additional Cap-and-Trade funding in 2014 prompted a new look at the IOS-South, which was more expensive than the IOS-North.

2016 Business Plan

In its 2016 Business Plan, the Authority adopted the Silicon Valley to Central Valley Line (Valley to Valley) as the preferred first Authority operated non-subsidized high-speed rail segment. Valley to Valley (formally described as IOS-N) was then defined as San José to Poplar Avenue (north of Bakersfield). This change occurred because the Valley to Valley segment was lower in cost when compared to the IOS-S, could be completed sooner, and could therefore generate operating revenue sooner.

The Authority considered that Cap-and-Trade, as a continuous appropriation, had the potential as a long-term revenue stream to support earlier completion of an Authority-operated high-speed rail segment. That potential was based on changes that would be needed to the Cap-and-Trade Program to allow for financing against proceeds. Had those changes occurred, and with federal funds and Proposition 1A bond funds, the Authority determined that it had the potential to provide total funding necessary to complete Valley to Valley. However, those changes did not materialize.

2018 Business Plan

In its 2018 Business Plan, the Authority's phased implementation strategy shifted slightly to define the Silicon Valley to Central Valley Line as service between San Francisco and downtown Bakersfield. Still, the strategy reiterated the Authority's intent to develop an initial line connecting the Silicon Valley to the Central Valley as soon as possible.

In addition, the San Francisco to Bakersfield line has stronger ridership potential and higher commercial value than the shorter line between San José and Poplar Avenue (north of Bakersfield) laid out in the 2016 Business Plan.

However, the 2018 Business Plan indicated that there was not sufficient funding to complete the Valley to Valley Line with currently available and committed funding. Therefore, the Authority stated its intent to seek the support of the ETO in evaluating the potential for an interim service in the Central Valley to provide early benefits until the Valley to Valley Line was fully funded. In the months since the 2018 Business Plan was published, we gathered a significant amount of new information. The ETO has played an important role in these efforts.

Early Train Operator's Analysis of Early Service

The 2018 Business Plan committed to reaching farther than the first 119-mile segment funded by the federal grants. A line connecting to Bakersfield would provide greater ridership and revenue and deliver an increased overall economic impact throughout the Central Valley. The plan also committed to evaluating an extension to Merced to link with other passenger services proposed for expansion by both the San Joaquin Regional Rail Commission (SJRRRC), which manages the Altamont Corridor Express (ACE), and the San Joaquin Joint Powers Authority (SJJPA), which oversees the San Joaquins service. A line making key connections to the expanded services would be more productive, provide greater travel opportunities and be more meaningful to the Central Valley than the shorter Madera to Poplar/Wasco segment.

In addition, the ACE and San Joaquins services expansion received a major commitment of funding from the state Transit and Intercity Rail Capital Program (announced in April 2018)—a commitment from all sources exceeding \$1.3 billion and enabling much better connected services to be operated to Merced from both the Bay Area and Sacramento.

Based on programmatic guidance, the ETO conducted an initial analysis of high-speed train interim service options to utilize, at the earliest possible time, assets constructed by the Authority. As part of its analysis, the ETO evaluated the following:

- Potential early operation of Merced to Bakersfield or San Francisco to Gilroy segments as identified in the 2018 Business Plan;
- In consultation with the California State Transportation Agency (CalSTA), the San Joaquin Regional Rail Commission (SJRRRC) and the San Joaquin Joint Powers Authority (SJJPA), evaluate the impact of the improvements to connecting the San Joaquin and ACE corridors in a manner that is aligned with the State Rail Plan; and
- Use of high-speed infrastructure and trains for enhanced intercity service in the Central Valley. This would allow the use of infrastructure as an enhancement to existing intercity and regional passenger services as part of the State Rail Plan and in conjunction with the investments being made in Valley Rail.

The ETO analysis found that a Merced-Fresno-Bakersfield service integrated with ACE and San Joaquin service was the only early operation that generated incremental value across all services. Additional planning and analysis is needed to further identify the optimal balance of operations, costs and revenues. However, the analysis showed incremental benefits to the state passenger rail network that generate much more ridership and greater value for

the public funding spent on operating intercity and regional rail services through the Central Valley.

The summary that follows identifies how a phased service implementation may potentially benefit the state's existing passenger rail system. The ETO Financial Plan Study (ETO Study) analyzed the impact of these options combined with existing rail and bus services in the Central Valley and San Francisco-to-Gilroy corridors. To view the ETO study visit http://hsr.ca.gov/docs/about/legislative_affairs/Central_Valley_and_Peninsula_Corridors_Operations_Financial_Plan_Study.pdf

These evaluations built off the 2018 California State Rail Plan and included operational factors, such as connectivity, ridership, passenger transfers and revenue. The analysis evaluated how interim service options could enhance, replace, augment or improve existing and proposed state rail services and improvements.

Central Valley Line

The ETO Study evaluated how riders of San Joaquins service from Sacramento and Oakland to Bakersfield might benefit from access to high-speed rail assets. In addition, the ETO used information from the service expansion for both ACE and the San Joaquins to envision better connections possible among rail and bus services when operated in an integrated rail network.

Options Assessed

The ETO Study included an assessment of four basic options varying in length. The alternatives included Madera to Poplar, Madera to Bakersfield, Merced to Poplar and Merced to Bakersfield. The ETO's Study looked at operational factors, such as connectivity, ridership, passenger transfers, revenue and alignment with the 2018 State Rail Plan. When evaluated against operational factors, two of the four segments, Madera to Poplar and Merced to Poplar, were screened out prior to any detailed analysis for the reasons listed below.

Analysis of Madera as a Stop

The ETO Study analyzed the performance of Madera as a stop, measuring Madera's feasibility by the following two main components:

- Direct access and direct egress, which reflects the passengers who access the system in this particular station; and
- Seamless connectivity, which reflects the impact in the passengers who are using the station as a transfer point between connecting services. The behavior of passengers when selecting a mode of

transportation is highly sensitive to the transfer times and ease of connections.

Analysis of Poplar as a Stop

The ETO Study used the same approach to measure Poplar's feasibility and found that:

- Poplar as the southernmost station of a future high-speed rail service presents a challenge from an operations perspective;
- High-speed rail service that stops in Poplar will leave Bakersfield without any rail service;
- The catchment area for Bakersfield's station is significantly higher than Poplar's station; and
- The cost addition related to operating down to Bakersfield instead of Poplar is minimal compared to the loss of ridership resulting from the exclusion of high-speed rail service from Bakersfield.

Analysis of Remaining Segments

The ETO Study then focused on the two remaining segments, Merced to Poplar and Merced to Bakersfield. After more analysis, the ETO Study eliminated Madera and Poplar as endpoints of an initial operating segment, then removed the Merced-Poplar segment from consideration.

The ETO Study examined Merced as a stop, finding that Merced offers:

- Better cost efficiency per train mile due to a longer high-speed section;
- Best option for seamless connectivity. After analyzing the State Rail Plan, Merced offers the best location for an intermodal station between ACE, high-speed rail and the San Joaquins;

- Higher ridership due to Merced's larger population making access for passengers more direct than compared to Madera; and
- The main drivers for the increase in Merced ridership compared to the scenario of Madera primarily results from reduced transfer penalties at Merced with the connecting services.

As a result, the ETO selected the Merced-Bakersfield segment as the only segment for further consideration.

Merced-Fresno-Bakersfield Study Assumptions

For comparison purposes, the ETO Study assumed the following:

- A scenario based on consultation with existing rail service providers that fully integrates ACE, the San Joaquins and high-speed rail services with the service levels currently funded through the Valley Rail Project and other state-funded projects, taking into account the capacity constraints of the private freight infrastructure being used;
- An investment to provide a connection between the San Joaquins and high-speed rail segment services at Merced, so that both ACE and the San Joaquins trains can service a combined station;
- High-speed rail service priced at fares similar to current San Joaquins services, and a regular hourly service would be offered on the high-speed rail segment; and
- The SJJPA would not operate any competitive service south of Merced.

The ETO Study included a qualitative and quantitative analysis of service, ridership forecasts and operations and maintenance cost estimates for the total corridor. Over the last several months, the Authority, working with CalSTA, has been discussing this alternative with the SJRRC and the SJJPA. The SJRRC indicated that it supports the option to coordinate services with the operator of the Central Valley high-speed rail service.

We support the Authority's recommended early interim service between Bakersfield, Fresno and Merced with stops at Kings/Tulare and Madera. Passengers will greatly benefit from slashing 90 to 100 minutes off train travel between Southern California and the Sacramento and Bay Area regions in the north. Currently, many people make these longer distance trips on the San Joaquins; a faster trip will attract even more riders. Direct connections in Merced to ACE and the San Joaquins will also translate into faster connections to the Capitols, Caltrain, BART, SacRT, Valley Link and VTA systems, which will also experience higher ridership. The success of this early interim service will re-energize the excitement and demand for the ultimate high-speed rail system.

- Stacey Mortensen,
Executive Director

San Joaquin Regional Rail Commission

The ETO Study included an analysis of ridership and farebox revenue forecasts. This analysis provided an understanding of how this improved high-speed rail service would compare to the service forecasted in 2026 without high-speed rail.

Ridership

Ridership and revenue forecasts used the State Rail Ridership model, calibrated for the ETO Study. This model better analyzed the impact to connected regional services. The Authority's existing ridership and revenue model is a planning tool designed for a more expansive network and the model is not adequate for the more detailed operations analysis of a shorter line segment. The State Rail Ridership model was calibrated based on input from the ETO, CalSTA and the SJRRC.

The model:

- Used the San Joaquin Corridor ridership and revenue data as input for calibration;
- Assumed high-speed rail from Merced to Fresno to Bakersfield as part of an integrated service with the San Joaquins, including stops at Madera and Kings/Tulare;
- Included the improved connections in the northern and southern Central Valley by 2026; and
- Used the existing fare policy of the San Joaquin Corridor.

The ridership forecast for an integrated service using high-speed rail assets resulted in revenues that were up to 2.8 times higher than the San Joaquins and ACE services forecasted in 2026 without high-speed rail. These projections include all estimated trips on an integrated passenger service network, including the

San Joaquins, the Altamont Corridor Express and high-speed rail services, as well as connecting bus services in Bakersfield.

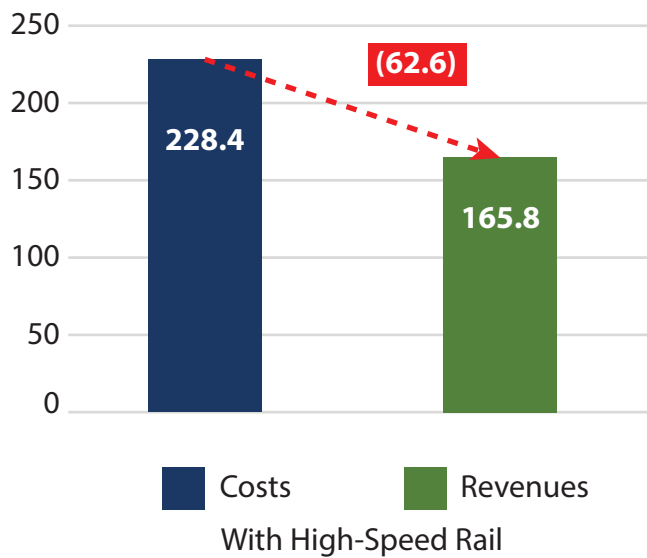
The main drivers for the higher ridership included:

- A substantially improved quality of service including reduced travel times and increased service levels;
- Fares consistent with current San Joaquins service;
- Improved accessibility at a Merced intermodal station, shortening transfer times between the San Joaquins, the Altamont Corridor Express and high-speed rail services; and
- Enhanced service levels, bus connections and the number of daily trips based on use of high-speed rail infrastructure.

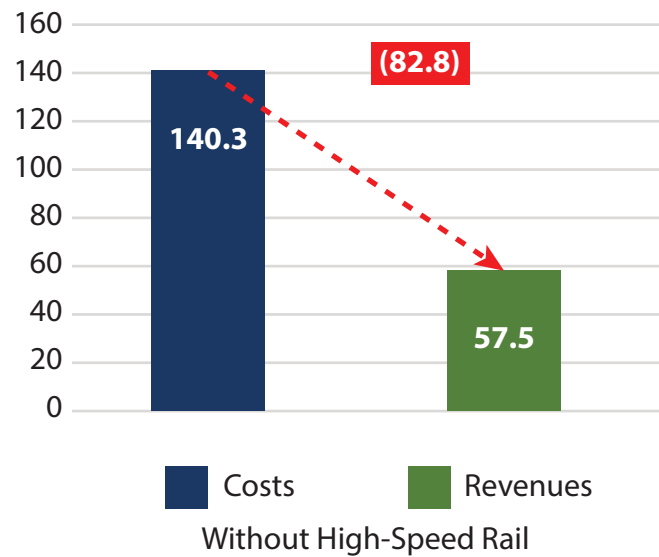
Farebox Revenue

The ETO Study also reviewed how much of the operations and maintenance of the system would be covered by farebox revenues and then calculated a farebox recovery ratio based on the combined farebox revenues (including ancillary revenues) over the combined costs. More specifically, the farebox-recovery ratio shows how much of the operating and maintenance costs are "covered" by the fare revenue. The farebox-recovery ratio includes high-speed rail, the Altamont Corridor Express and the San Joaquins services.

Fares from the forecasted service in 2026 without high-speed rail will cover approximately 41 percent of the current operations and maintenance costs. Incorporating high-speed rail infrastructure and trains into this network could improve that to 73 percent

EXHIBIT 1.1: OPERATIONS AND MAINTENANCE COSTS VERSUS FARE REVENUES (IN 2018\$ MILLIONS, 2026)

by providing more frequency, faster service and the elimination of delays due to freight trains, thus attracting more people to the system. Much more service (approximately double the number of total train miles) and much greater ridership is realized on the proposed system. The revenues were evaluated in total for all services. The revenue sharing agreements have not yet been established between the operators.

EXHIBIT 1.2: OPERATIONS AND MAINTENANCE COSTS VERSUS FARE REVENUES (IN 2018\$ MILLIONS, 2026)

According to the ETO's report, the financial scenario is better with high-speed rail than without high-speed rail, as shown in **Exhibits 1.1 and 1.2**. Total operating and maintenance costs with high-speed rail are 1.6 times higher than without high-speed rail in 2026. However, total revenues with high-speed rail are 2.9 times higher than without high-speed rail, resulting in a smaller gap of \$62.6 million compared to \$82.8 million.

This means that from the point of view of California's state budget, introducing early high-speed rail services in the Central Valley (Merced-Fresno-Bakersfield) is financially attractive and creates benefits for the communities in the integrated corridor because of the positive impacts shown across the San Joaquins and ACE corridors.

Early Train Operator's Conclusions

The analysis concluded that improving service between Merced, Fresno and Bakersfield with a high-speed rail interim service—in coordination with improvements aligned with the State Rail Plan north of Merced to Sacramento and to the Bay Area and bus connections south of Bakersfield to Southern California—created the highest value and benefits, including:

- Provide faster, more frequent and more reliable passenger service than is currently available in this corridor, as shown in **Table 1.0**;
- Reduce travel times for passengers between Sacramento and the Bay Area to Bakersfield by up to 90 to 100 minutes;
- Enhance connectivity and accessibility to other passenger-rail services;
- Provide the highest ridership potential and fare revenue of any other Central Valley option, as shown in **Table 1.1**;
- Improve air quality in the Central Valley by shifting from diesel to clean, electrically powered trains;
- Provides an overall infrastructure configuration offering significant benefits to both passenger and freight movement; and
- Allow for early testing of high-speed operations and passenger use and reduce ramp-up time for future extensions.

Additional planning and analysis is expected to advance on this scenario to address how to best optimize this service after addressing necessary agreements with and requirements from various stakeholders and agencies.



PHOTO: INTEGRATING HIGH-SPEED RAIL WITH INTERCITY BUS, REGIONAL RAIL AND LOCAL TRANSIT WILL BENEFIT TRAVELERS.

TABLE 1.0: MERCED-FRESNO-BAKERSFIELD - BENEFITS WITH AND WITHOUT HIGH-SPEED RAIL (2018\$, IN MILLIONS)

Description	Corridor Without High-Speed Rail (ACE and San Joaquins only)	Corridor With High-Speed Rail (Includes ACE and San Joaquins)	Benefits with High-Speed Rail (Includes ACE and San Joaquins)
Train miles of service per year	990,838	1,932,225	More than double the service and more frequent service
Travel time change	—	Reduces travel time by more than 90 minutes	Higher quality service
Average operating cost per train mile	\$118.04	\$110.61	More efficient cost per mile
Percentage of costs covered by fare revenues (includes thruway bus)	41%	73%	32% improvement

TABLE 1.1: ANNUAL OPERATING COSTS AND FARE REVENUES WITH AND WITHOUT HIGH-SPEED RAIL (2018\$, IN MILLIONS)¹

	Operating Costs	Fare Revenue	Difference
Without High-Speed Rail (ACE and San Joaquins only)	\$140.3	\$57.5	(\$82.8)
With High-Speed Rail (ACE and San Joaquins)	\$228.4	\$165.8	(\$62.6)
<i>1 - Based on 2026 operating year assumption; analysis to be updated.</i>			

San Francisco Peninsula: San Francisco– San José–Gilroy

The ETO study identified a high-speed rail service scenario for the section from the 4th & King station in San Francisco to Gilroy, evaluating the operations and maintenance costs and ridership/revenues. This included an analysis of an extended electrified high-speed line from San José to Gilroy and included a comparison to an estimated service level that the corridor could theoretically achieve, considering improvements currently under development by Caltrain.

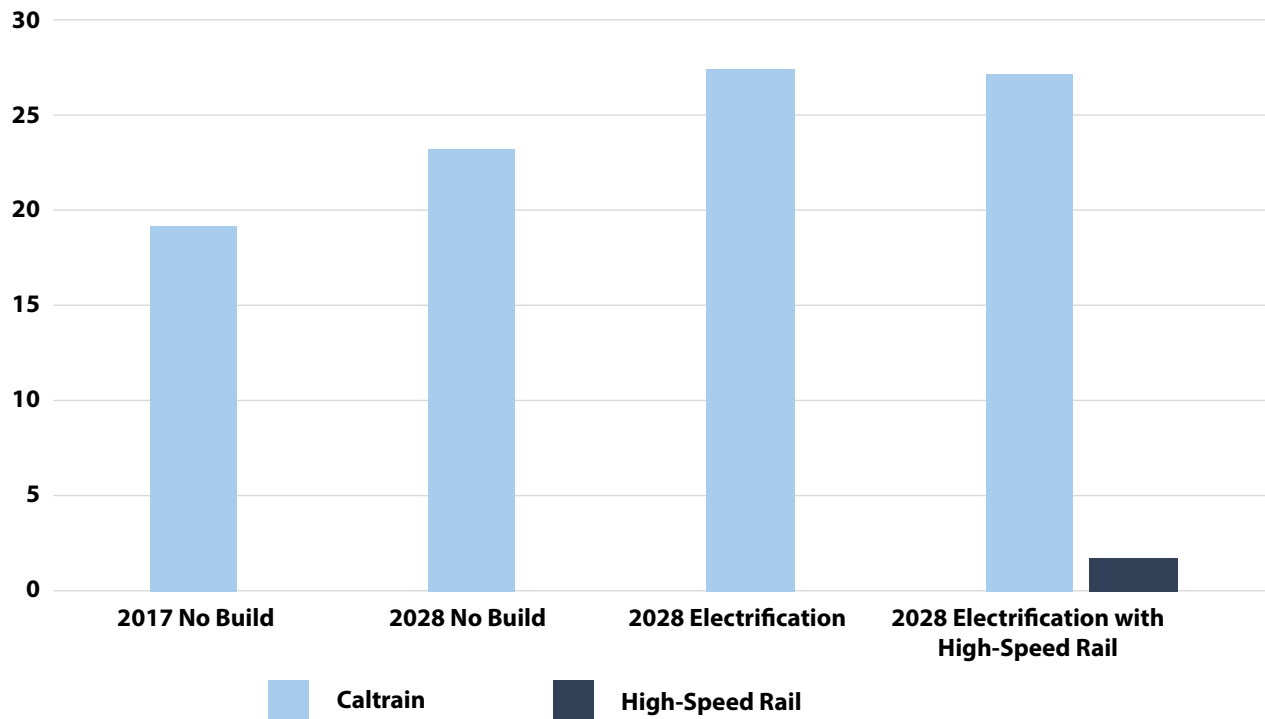
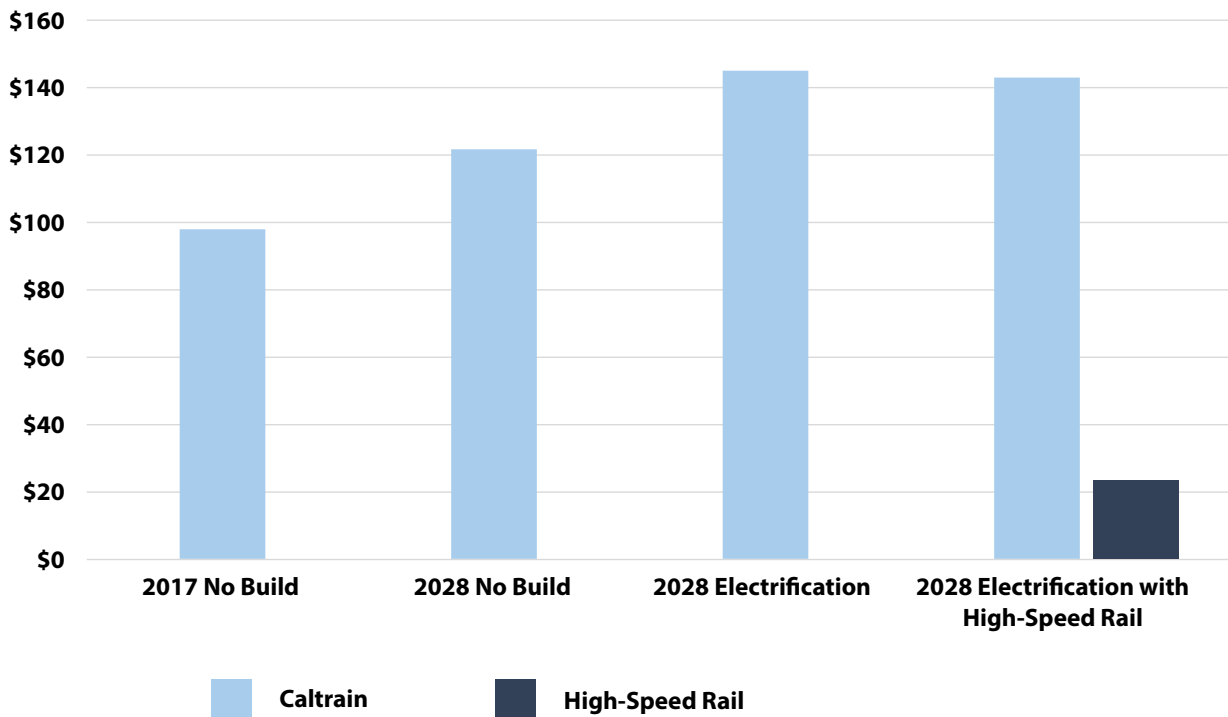
The ETO Study concluded that most of the improvements to service in this corridor will be captured by the Caltrain Electrification Project already underway. It concluded that:

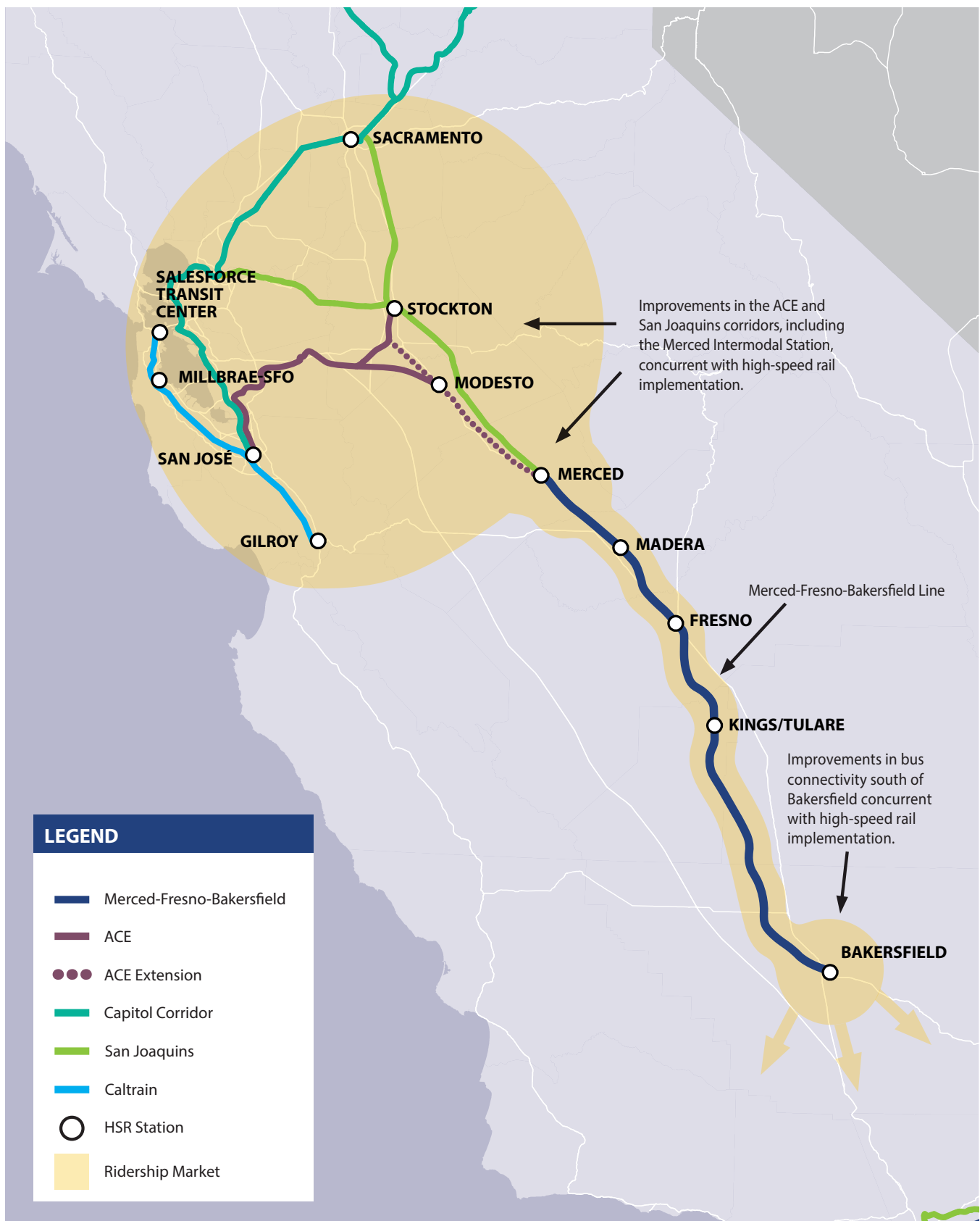
- Early high-speed rail operations, servicing only four high-speed rail stations, will have a relatively small impact on corridor ridership prior to the full connection to the Central Valley since ridership between these four stations comprises only about 12 percent of Caltrain's total ridership. Caltrain is already proposing an increase in all-day local and express service as part of its electrification program; and
- As shown in **Exhibits 1.3 and 1.4**, in the absence of full Silicon Valley to Central Valley service, Gilroy to San José passengers would benefit most from an integrated service that functions as an extension and expansion of Caltrain service, rather than as an overlay of high-speed rail services serving limited stops and requiring a transfer.

Additional analysis is recommended to consider the implications of interim use of this corridor in advance of the full Silicon Valley to Central Valley service.



VISUAL: STATION AREA DEVELOPMENT WILL INVOLVE LOCAL COMMUNITIES.

EXHIBIT 1.3: ANNUAL RIDERSHIP, BASED ON ETO STUDY OF SAN FRANCISCO TO GILROY (FIGURES IN MILLIONS)**EXHIBIT 1.4: ANNUAL REVENUE, BASED ON ETO STUDY OF SAN FRANCISCO TO GILROY (FIGURES IN MILLIONS)**

**EXHIBIT 1.5: MERCED-FRESNO-BAKERSFIELD CONNECTIVITY ANALYSIS MAP**

Merced-Fresno-Bakersfield Interim Service Benefits

The 171-mile trip from Merced to Bakersfield currently takes 2.5 hours by car and more than 3 hours by existing passenger rail. Implementation of high-speed intercity rail service could cut that travel time in half, as shown in **Exhibit 1.6** on page 23. The faster travel times and the improved connectivity that high-speed rail will bring to the Central Valley has the potential to fundamentally transform the regional economy.

But the first building block will also deliver other benefits, including:

- Improved reliability by operating on a dedicated passenger rail line allowing more frequent, on-time service within the Central Valley;
- Faster travel for passengers traveling between Sacramento and the Bay Area to Bakersfield by reducing trip times by 90-100 minutes;
- Better connections to the Altamont Corridor Express and San Joaquins services to the north and bus connections from Bakersfield to the south, improving access to other California destinations (as shown in **Exhibit 1.5**); and
- Replacing diesel passenger service with clean, electrified trains, which reduces CO₂ emissions.

The Authority coordinates extensively with CalSTA and other regional partners on planning and implementing the overall Statewide Rail Modernization Program. The goal is to incorporate high-speed rail into a single, integrated state rail improvement strategy.

The 2018 State Rail Plan lays out a vision for statewide, integrated rail and transit service, allowing for rail to connect all urban, suburban and rural communities with frequent, reliable service by 2040. It focuses on the benefits of being able to reliably connect between systems with well-planned transfers, and to purchase and plan travel with one easy transaction, including travel that will include the high-speed rail system. Many investments are contemplated to be in place in the first 10 years (by no later than 2027), allowing for high-speed rail to connect to improved rail, express bus and transit services at all stations.

Examples most relevant to the Central Valley high-speed rail service include:

- Transit connectivity to the Altamont Corridor Express (ACE) service and San Joaquins services traveling to the Bay Area and to Sacramento in the north;
- Frequent rail services connecting Sacramento and the northern Central Valley at Merced, allowing high-quality transfers to high-speed rail service;
- Improved express bus service connecting the Central Coast and Visalia/Porterville with the Kings/Tulare station; and
- Improved express bus service between Bakersfield and Santa Clarita, connecting to more frequent rail services between Santa



**NEW HIGH-SPEED RAIL STATIONS
WILL PROVIDE CONNECTIONS AND
PASSENGER AMENITIES.**

ARTIST CONCEPT

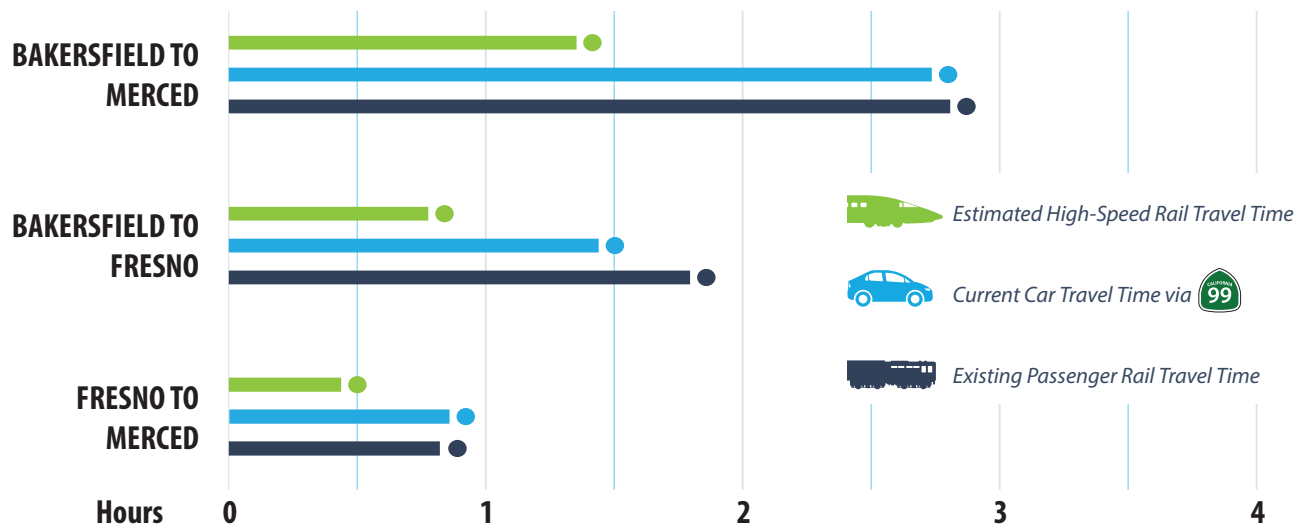
Clarita and Los Angeles, Orange County and San Diego, as well as the rest of the Metrolink system.

By planning and partnering with these agencies and projects, the Authority can further identify ways that investments may yield near-term benefits that enhance current rail and transit services and provide significant improvements and access to future high-speed rail service.

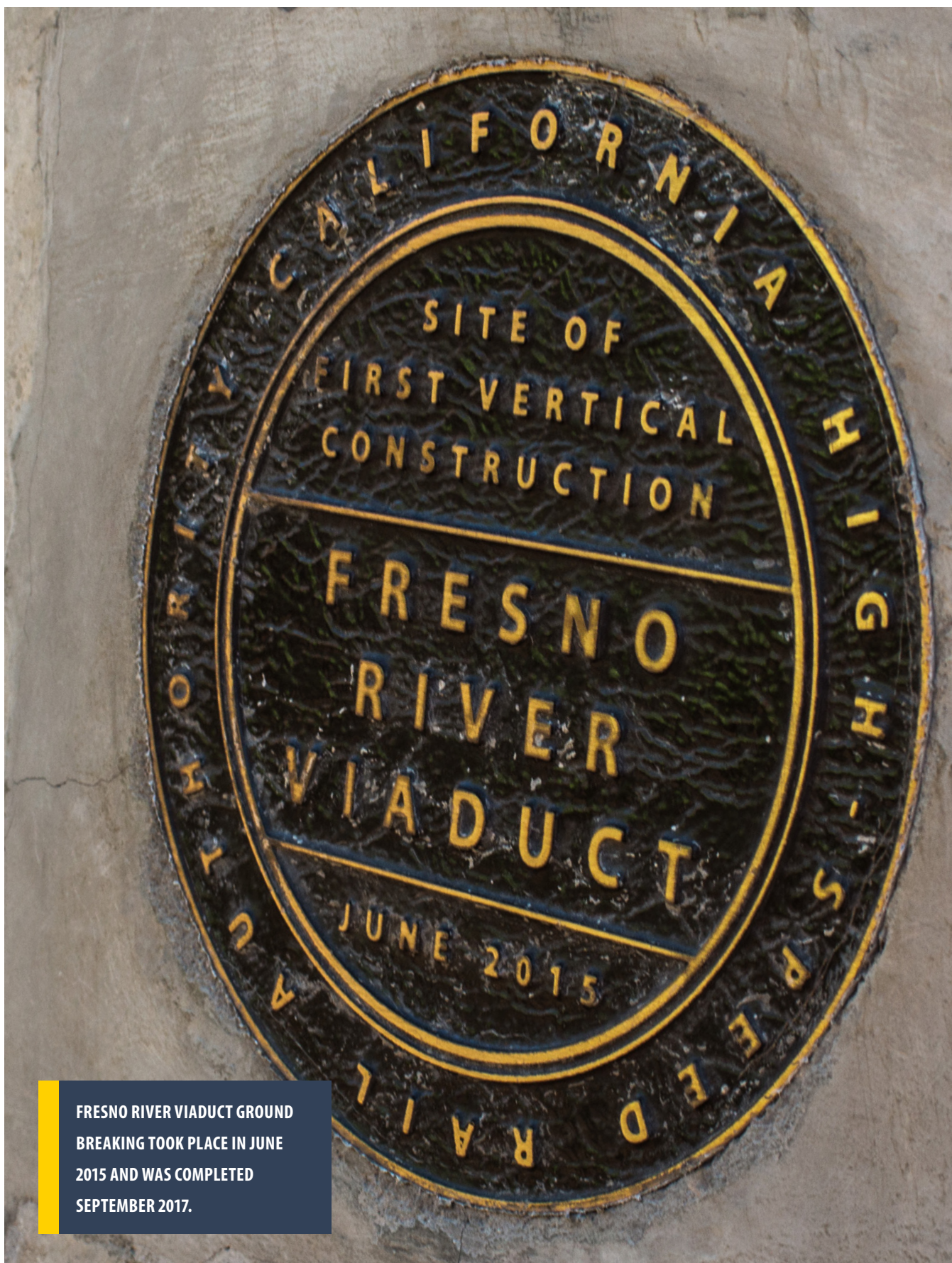
Moving forward, further coordination is necessary with CalSTA, the SJRRRC, the SJJPA and others regarding possible integrated operations and service options. This work will require further analysis of additional infrastructure and the train equipment options that may be available for the interim service, a detailed service plan and a coordinated funding and implementation strategy to ensure successful integration of services.

For additional steps moving forward, **see Chapter 4, Implementation Plan.**

EXHIBIT 1.6: COMPARATIVE TRAVEL TIMES FUTURE HIGH-SPEED RAIL, EXISTING CAR, AND PASSENGER RAIL



*All travel times are approximate. Trips are measured from central business district, existing passenger rail stations, or planned high-speed rail stations. Existing passenger rail travel times were approximated using the Amtrak website, referencing schedules current as of publication. Car travel times were estimated based on mid-week, peak-hour trip. High-speed rail travel times are for non-stop service.



**FRESNO RIVER VIADUCT GROUND
BREAKING TOOK PLACE IN JUNE
2015 AND WAS COMPLETED
SEPTEMBER 2017.**



FRESNO

CHAPTER 2: CAPITAL COST REVIEW

In the 2018 Business Plan, the Chief Executive Officer directed that additional work be conducted on the capital cost estimates including a thorough review by the Early Train Operator and a comprehensive risk review. This chapter reports on the results of that work.

For the 2018 Business Plan, the Authority updated its estimates on program baseline costs and schedule for completing the 119-mile Central Valley construction project currently underway and the estimated costs and schedule for delivering the Silicon Valley to Central Valley Line and Phase 1 System. For the first time, the costs were presented in ranges based on current project status in various stages of project development. Where a project was more advanced, and costs were more certain, the estimates were presented in a narrower range. If design was less

advanced and costs were less certain, the estimates were presented in a wider range. These ranges were based on estimate classifications by AACE International (American Association of Cost Engineers) and varied depending on the complexity of the project scope elements, maturity of underlying technical baseline information and the inclusion of appropriate contingencies. The range assumed a general level of risk based upon each projects level of development which was applied as an overlay to the estimate. In addition, the 2018 Program Baseline cost estimate established initial costs for construction risks in the Central Valley known at the time.

Following the adoption of the 2018 Business Plan by the Board of Directors in May 2018 and its delivery to the Legislature, the Authority Board adopted the 2018 Program Baseline—which established the

scope, schedule, costs and budget for the Silicon Valley to Central Valley project and all Phase 1 environmental and planning documents. The 2018 Program Baseline established a structured process for evaluating and managing changes going forward.

As committed to in the 2018 Business Plan and noted above, the CEO directed additional cost estimate review and risk analysis. Specifically, this included:

- The Early Train Operator (ETO) conducted an independent benchmark exercise of capital cost elements to identify any areas where further refinement was appropriate, this included a comparative analysis of similar cost elements and a review of assumptions where variances were identified;
- An updated estimate-at-completion (EAC) of the 119-mile Central Valley Segment and Merced-Fresno-Bakersfield line;
- An expanded Monte Carlo risk analysis to determine if the range-based approach should be updated or further adjusted; and
- Work to further define risk areas and detailed mitigation strategies.

This chapter describes the work that has been completed and the results of these reviews. Further discussion of construction risks and mitigation can also be found in **Chapter 6, Program Risk**. To view the ETO report visit http://hsr.ca.gov/docs/about/legislative_affairs/Review_of_Capital_Costs_Est_2018_Assoc_with_Section_SF_Baker_Valley_To_Valley_Concept.pdf

Early Train Operator Review of Cost Estimates

The ETO completed a review of the 2018 Program Baseline Capital Costs contained in the 2018 Business Plan. The ETO's review focused on the Silicon Valley to Central Valley Line and provided a benchmarking comparison to the construction costs associated with Deutsche Bahn high-speed rail projects in Germany. The objective of the benchmarking study was to identify potential cost estimate revisions based on experience with similar high-speed rail projects.

Some cost categories—such as right-of-way acquisition, utility relocation and environmental mitigation—are location dependent and unique for each project section; therefore, these cost categories were excluded from the review. In addition, the ETO cost analysis excluded from its review other specific costs in each category related to labor rates, material availability, transportation costs, contingencies and Buy America requirements as these requirements were not comparable to European examples.

The ETO study identified improvement opportunities that could affect the budget estimation, including labor assumptions for tunnel construction, technical recommendations to be addressed in the procurement processes and other improvement opportunities to be further developed after a more detailed level of design is available.

The following seven cost elements were the most applicable and had the most significant impact on the Authority's cost estimates:

- Tunnels (21 percent);
- Viaducts and bridges (17 percent);

- Grade separations (8 percent);
- Track (ballasted) (5 percent);
- Earthwork (4 percent);
- Retaining walls (4 percent); and
- Overhead catenary system (3 percent).

Of these, the largest cost drivers—nearly 40 percent of the costs—are major structures, including viaducts, bridges and tunnels. These elements also involve the largest labor and materials costs and contain the greatest unknowns in terms of underground conditions once in construction.

Tunnels

The ETO's benchmarking comparison indicated that the construction costs of high-speed rail tunnels in Germany were about 56 percent lower than the Authority's estimates for the Pacheco Pass tunnel. The main cost categories driving this difference are procuring tunneling equipment, mining and mucking operations, pre-cast concrete lining, and time-dependent indirect costs.

However, the Authority's construction cost estimates for the Pacheco Pass tunnel appear to be in line with the historic tunnel costs experienced on various rail transit and commuter rail projects in the United States, per the Federal Transit Administration's capital cost database. A review with the ETO led to a re-evaluation of the assumptions on the makeup of tunneling crews, and the Authority will update the Pacheco Pass tunnel construction cost estimate in the next program baseline revision as part of the 2020 Business Plan.

Most importantly, the ETO also recommended performing supplemental geotechnical investigations

and reviewing the tunnel design criteria to potentially optimize construction cost estimates by reducing overly conservative design assumptions commonly associated with the unidentified risks of underground construction.

Viaducts and Bridges

The ETO's benchmarking comparison indicated that the construction costs of high-speed rail bridge and viaduct structures in Germany were about 25 percent lower than the Authority's estimates for these structures located in the Central Valley. After further review, the ETO determined that this cost difference is primarily driven by the seismic conditions in California and in the Central Valley, which is a moderate seismicity zone. Site-specific seismic requirements were considered as a factor to adjust the values for better comparison.

Based on this analysis, the Authority will update its Design Criteria Manual to allow for innovative structure design guidance, such as the use of seismic isolation bearings, which could lead to more efficient foundation designs and, potentially, to lower construction costs.

The ETO's review also suggested more extensive use of pre-cast concrete design for viaduct structures. This approach will reduce the time required to build these structures—especially those longer than 2 miles, such as the planned viaduct structure in Bakersfield. In addition, this approach will allow the Authority to start follow-on track and systems construction activities earlier, leading to tangible reductions in the overall delivery schedule while reducing time-dependent indirect costs.

Other Costs

The ETO noted that additional information on the track construction cost would be necessary to validate the estimated construction costs of ballasted track, as well as slab track, to confirm the cost of materials and production rates. The Authority is performing outreach to major suppliers of track materials to validate these construction costs.

In addition, the ETO's review recommended conducting a power study to validate budget allowances on traction power facilities and utility interconnections. The Authority has completed this study and will review the results with the ETO team as part of the next phase of review.

Early Train Operator's Role Going Forward

The ETO's benchmarking assessment provided the Authority several areas where our cost estimates could be further refined. The ETO recommended that, as the Authority defines designs further and more information becomes known, any deviation amounts should be put in contingency. The ETO also recommended that the Authority regularly assess both risks and opportunities and adjust contingencies as appropriate. The Authority concurs with and is implementing this recommendation; risk identification and assessment workshops have been conducted as part of the baseline revision process.

Based on the ETO's review, the Authority is taking the additional actions shown in **Exhibit 2.0 on the following page** over the next year. The Authority will provide the Legislature and the public with a further update on our cost estimates and risk analysis in the Draft 2020 Business Plan which will be issued for public review in February 2020.

The ETO's continuous involvement with program-development activities, including its review of preliminary engineering, procurement and final design documents, presents a unique opportunity to optimize California's high-speed rail system to achieve high levels of reliability, availability and maintainability. This will further our goal of assuring safe and cost-effective high-speed rail operations.

EXHIBIT 2.0: EARLY TRAIN OPERATOR RECOMMENDATIONS/AUTHORITY ACTIONS

Early Train Operator Recommendations	Authority Actions
Review improvements opportunities in these Seven major cost drivers	Update Design Criteria Manual
<ul style="list-style-type: none"> ■ Bridges and viaducts ■ Earthwork ■ Tunnels ■ Retaining walls ■ Track ■ Grade separations ■ Overhead catenary system 	<ul style="list-style-type: none"> ■ Reflect innovative structural design in design criteria manual (by 6/30/19) ■ Review track and system estimates to validate assumptions on material and production costs (by 12/31/19) ■ Review tunnel assumptions (by 12/31/19)
Configuration matrix and technical recommendations	Incorporate ETO as part of the verification and validation team for future project development
<ul style="list-style-type: none"> ■ ETO suggests reviewing the technical recommendations given in its report to prevent additional risks ■ Creation of a Baseline Configuration Traceability Matrix to track the impact of changes between the different components 	<ul style="list-style-type: none"> ■ Establish a joint technical group for verification and validation of technical assumptions ■ Establish a joint cost estimating group for verification and validation of costs ■ Adjust configuration management process
Schedule, risks and opportunities register, alignment of cost components in sections	Complete Authority cost update and risk analysis and align cost structure in the sections
<ul style="list-style-type: none"> ■ Creation of a risk and opportunities register, adjustment of the contingencies for each Cost Component. ■ Update project schedule for updating the critical path. ■ Align cost components within all sections to identify missing costs 	<ul style="list-style-type: none"> ■ A comparison of the sections cost structure will be conducted in order to detect cost components not being considered within specific sections (by 12/31/19) ■ Update schedule (Completed) ■ Update risk register (Completed)

Estimate at Completion and Monte Carlo Analysis

In addition to the ETO review of our cost estimates, the Authority conducted an estimate-at-completion review and a Monte Carlo risk analysis as part of its ongoing review and updates to the Central Valley Segment capital costs and schedule.

This Authority will conduct a cost-risk evaluation (CRE) annually. This annual update process allows the Authority to evaluate current requirements and associated risk which may have developed during the preceding period. These may result in reductions in risk profiles or an increase as a result of new risks being identified.

Monte Carlo simulations are an analytic technique used by transportation professionals in the public and private sectors. Monte Carlo analysis uses a statistical evaluation of known risks to predict probability of known and unknown events. The goal of a Monte Carlo simulation is to quantify the chance, or probability, that a particular risk will occur. This is to better understand the variable effect a risk might have on future costs, revenues, schedule or other aspects of a program.

The results of the Monte Carlo analysis provides decision-makers a more thorough understanding of the impacts and a level of confidence associated with a specific estimate. This drives more informed choices, strategies and plans to prevent, manage or mitigate these potential risks and for establishing project budgets, including setting appropriate contingency levels.

As noted above, the 2018 Program Baseline cost estimate used a risk overlay to establish updated cost estimates. This means that depending on the level of design a risk percentage was assigned to various categories of construction.

Risk Analysis Methodology and Recommended Confidence Level

The Authority conducted a robust risk assessment effort on the capital costs of the Central Valley Segment to identify and quantify discrete cost and schedule risks as well as the uncertainties associated with the program scope. This assessment included a thorough review of the base project scope, cost and schedule established in the 2018 Program Baseline followed by a comprehensive process to identify and quantify individual project risks relating to potential cost and schedule variables.

The risk management team then integrated risk events and uncertainties into the 2018 Program Baseline estimate and schedule to build a bottom-up risk model using a Monte Carlo simulation technique. By utilizing a Monte Carlo analysis, the range of possible outcomes, such as finish dates and cost exposure, as well as the probability or confidence level associated with each potential outcome could be determined. This technique allows the Authority to statistically quantify the cost and schedule impacts to projects being completed within budget and on schedule.

This risk-informed forecast allows the Authority to:

- Drill-down and understand the impacts of specific risks;
- Supports prioritization of risks for mitigation;

- Implement risk management and mitigation measures; and
- Proactively monitor the program's costs.

For capital projects, contingency reserves are necessary to cover potential increased costs that may result from project unknowns and known risk events. These known and unknown risks are often associated with unexpected design complexity, incomplete understanding of stakeholder requirements, technology or market uncertainty, physical construction impacts and procurement strategy. The amount of contingency selected for any given risk can vary depending on the severity of the risk and the overall likelihood of it occurring. The Monte Carlo analysis allowed the Authority to test the variability of a number of different risks occurring to more specifically understand individual risks.

By developing these risk-informed forecasts and accounting for a potential number of unknown variables associated with implementing the additional scope identified, the Authority is now reconsidering the confidence level it has been using to establish contingency budgets. The prior Central Valley Segment budget assumed essentially a P10 (10% probability) estimate – a 10% confidence that the costs would be within that identified budget.

By going through the Monte Carlo exercise staff has identified many risks remain with current construction and new risks have been added with new scope. Given this, staff will be recommending to the Board of Directors that a new Central Valley Segment budget be set using a 70th percentile, or P-70, confidence level. By using a higher confidence level, the Authority is accounting for risks it is currently tracking and managing and for the unknown risks that

may still occur given the current status of design and construction. This is a prudent, industry best practice approach based on the current status of the project.

Along with this recommendation to increase the amount of contingency reserve, Authority staff will also be discussing with the Board the approach to managing these on-going risks and how these contingency funds will be spent.



PHOTO: CENTRAL VALLEY CONSTRUCTION WORKERS INSTALLING STEEL REBAR

Updated Central Valley Segment Cost Estimate

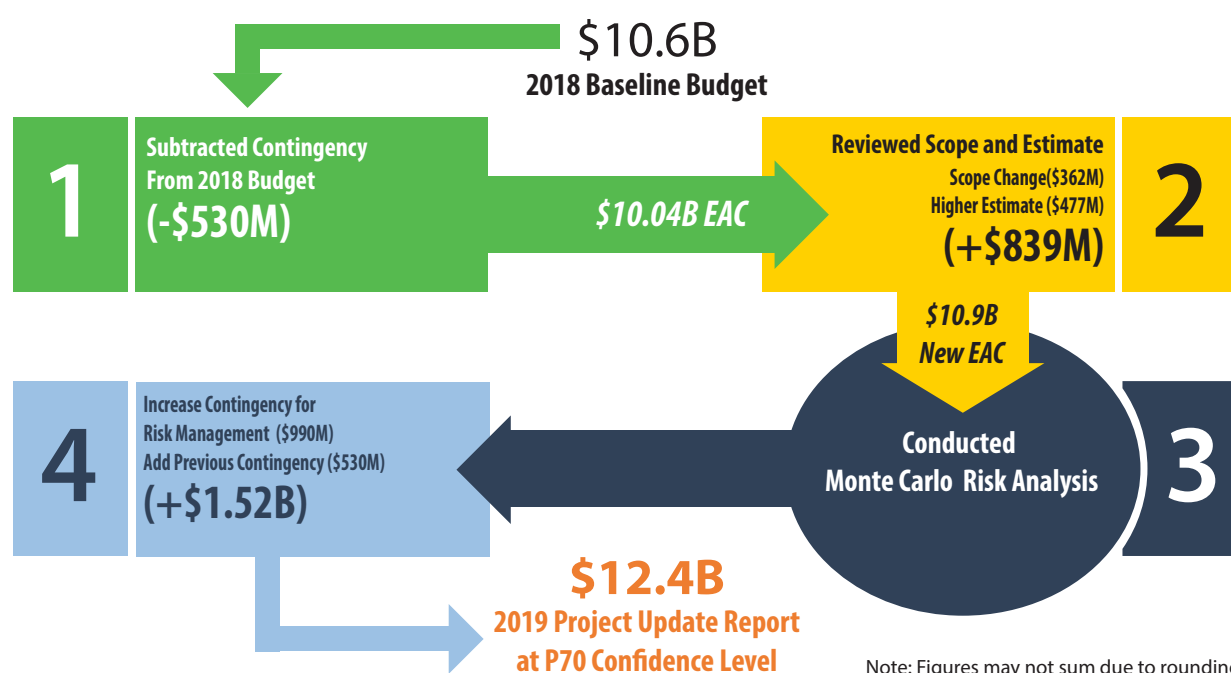
The Monte Carlo Analysis required staff to build—from the bottom up—a Central Valley Segment cost estimate. This involved assessing the current construction scope remaining and updating the Estimate at Completion (EAC), identifying new scope based on decisions and developments since the 2018 Business Plan and, lastly, conducting the Monte Carlo analysis on the current and new remaining scope. The result of updating the EACs and conducting enhanced risk analyses is a recommendation to the Board of Directors to increase the Central Valley Segment 2018 Program Baseline budget (detailed in the 2018 Business Plan and adopted by the Board of Directors) from \$10.6 billion to \$12.4 billion – roughly the high end of the cost range used in the 2018 Business Plan. Doing so involves increasing the contingency to manage risks by \$990 million, for a

new total contingency of \$1.52 billion, which reflects the recommendation to set the budget at the P-70 confidence level.

This section discusses the key drivers associated with this proposed budget increase: (1) scope changes (\$362 million) and (2) higher cost estimates (\$477 million). It also identifies using a recommended P-70 confidence level for costs assigned to potential risks based on Monte Carlo analysis (\$990 million), as shown in **Exhibit 2.2**.

The steps associated with developing this updated budget are shown in **Exhibit 2.1** below and discussed further below. As a first step, the Authority subtracted all contingency costs associated with risk (\$530 million) from the \$10.6 billion 2018 Program Baseline budget.

EXHIBIT 2.1: CENTRAL VALLEY SEGMENT COST ESTIMATE REVIEW AND RISK ANALYSIS PROCESS



Scope: As part of the second step, the Authority identified scope changes subsequent to the establishment of the 2018 Program Baseline budget.

The factors driving scope change include:

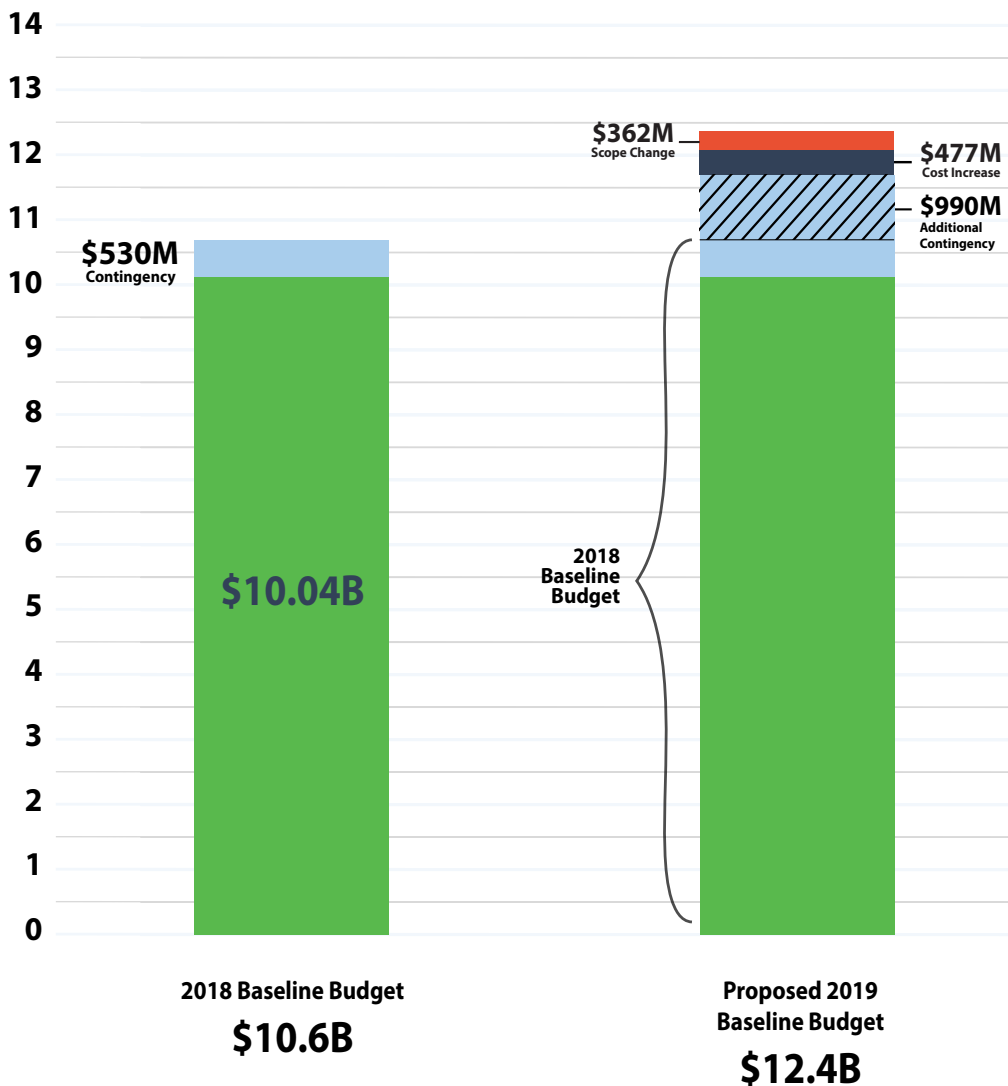
- Changes in design specification for existing scope; and
- Settlement negotiations with third parties and railroad.

The net increase associated with these and scope changes is \$362 million.

Cost estimates: The second step also involved identifying areas where the 2018 Program Baseline cost estimates were either too high or too low.

Cost increases occurred due to further investigation and re-evaluation of 2018 Program Baseline estimates. Examples of cost estimate increases include changing the procurement approach for the Northern Extension, delay costs, and updated designs. The net increase

EXHIBIT 2.2: CENTRAL VALLEY SEGMENT: 2018 BUDGET AND PROPOSED 2019 BUDGET



associated with these changes to the cost estimates is \$477 million.

The Authority then added the total of these increased costs—for scope and for higher cost estimates—to the stripped \$10.4 billion 2018 Program Baseline estimate resulting in a new projected Estimate at Complete (EAC) of \$10.9 billion for the Central Valley Segment.

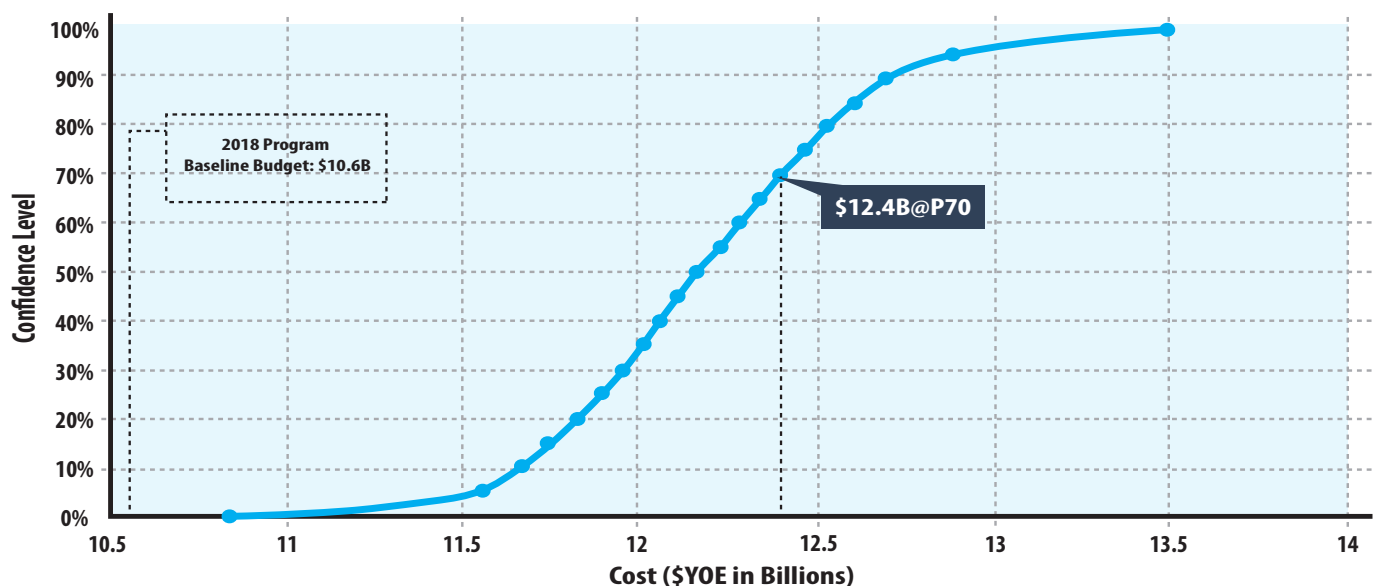
Monte Carlo risk analysis: In the third step, the Authority conducted the Monte Carlo risk analysis. Among the risks accounted for in this analysis were additional potential cost risks associated with the three design-build construction packages and right-of-way acquisition costs. The results of this analysis are shown in **Exhibit 2.3** below which shows a cost risk curve ranging from a P0 to P100. This exhibit is a common visual representation of a Monte Carlo risk assessment.

Chapter 6, Program Risk, specifically the section titled Managing Construction Risk, summarizes the major ongoing risks facing the completion of the Central Valley Segment and the extensions to Bakersfield and Merced and the mitigation strategies underway.

As discussed above, staff recommends selecting the P-70 confidence level as a prudent basis for updating the 2018 Program Baseline budget for the Central Valley Segment. This provides for additional contingency for future risks. For the final step, the Authority added the risks costs stripped out of the 2018 Program Baseline (\$530 million) with the results of the Monte Carlo analysis and the selection of the P70 confidence level (\$990 million). The sum of these two figures created \$1.52 billion in contingency for the Central Valley Segment.

The combination of scope changes, cost estimate increases, as well as the updated risk analysis would result in an updated \$12.4 billion budget for the Central Valley Segment.

EXHIBIT 2.3: CENTRAL VALLEY COST RANGE BASED ON MONTE CARLO ANALYSIS



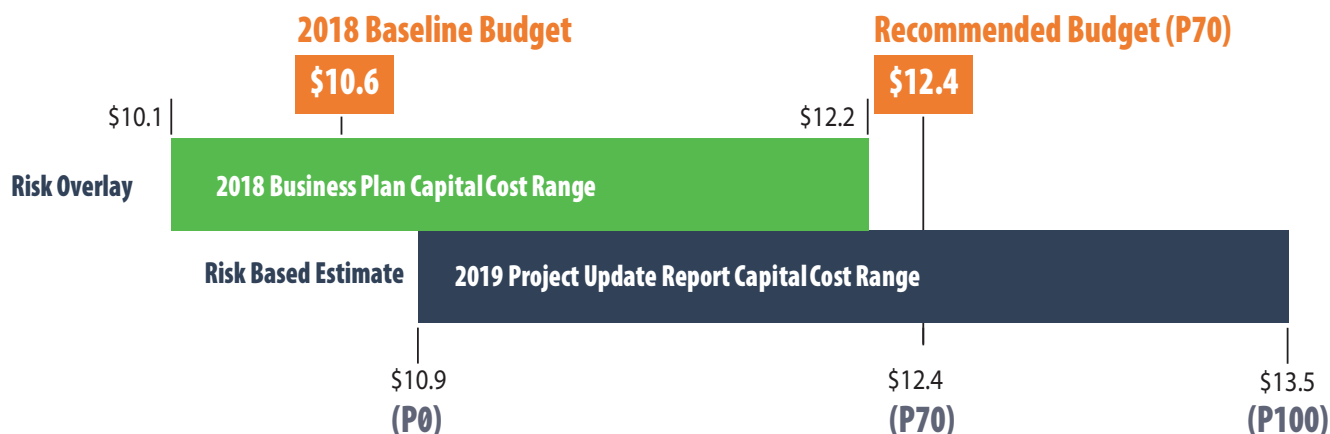
Revised Central Valley Segment Cost Range

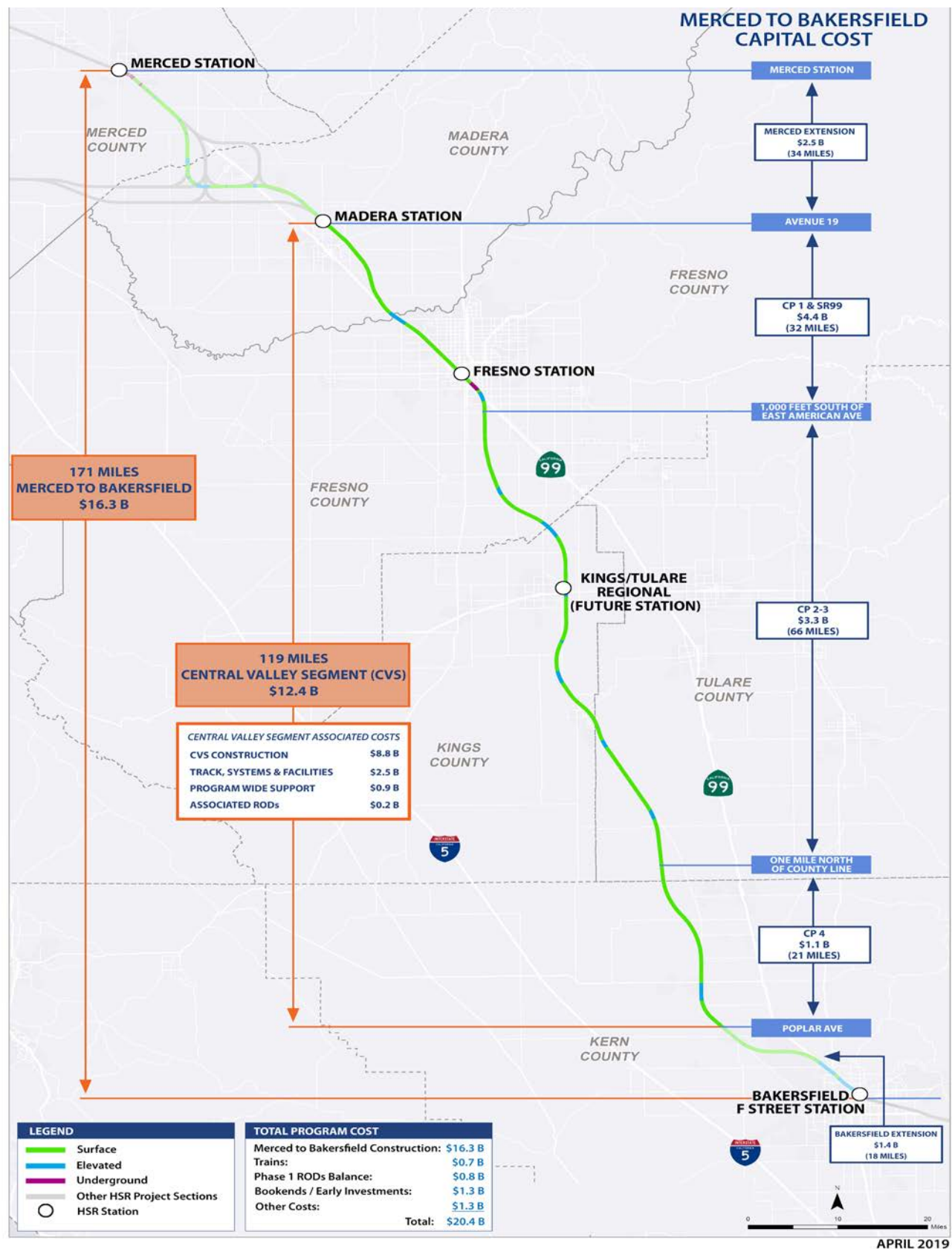
Exhibit 2.4, below, shows the comparison of the updated cost estimate range based on the Monte Carlo analysis to the range shown in the 2018 Business Plan.

What this graphic shows is that the estimate range identified in the 2018 Business Plan is consistent with the new range established as a result of the Monte Carlo analysis. This new range reflects:

- The risks that remain to construction are many and we still have nearly four years of environmental review and construction to complete the federal scope of work by December 2022. There will be another six years after that to complete a Merced-Fresno-Bakersfield line by the end of 2028. In addition, due to current issues with the federal government, there are some risks that may be out of our control. However, for
- the risks we can control, we are prepared to manage them.
- We are still in the process of working through legacy issues with our contractors and the fact of the matter is, after many years of negotiation, right of way still needs to be acquired and third-party agreements need to be resolved. We have recently been granted additional authority by the Legislature related to right of way. However, these legacy issues continue to affect construction delivery.
- The Central Valley Segment recommendation increases the amount of budget allocated to address risk based upon the updated Monte Carlo risk review. This increases the confidence in meeting this budget to a P-70 confidence level and implements an industry best practice approach towards addressing risk through contingency reserves.

EXHIBIT 2.4: CAPITAL COST RANGE COMPARISON - 2018 BUSINESS PLAN VS 2019 PROJECT UPDATE REPORT (\$YOE IN BILLIONS)



**EXHIBIT 2.5: MERCED-FRESNO-BAKERSFIELD CAPITAL COST ESTIMATES (\$YOE IN BILLIONS)**

Merced-Fresno-Bakersfield Building Blocks

Exhibit 2.5 on the previous page provides the capital cost estimates to complete the Merced-Fresno-Bakersfield line and the program support costs.

Exhibit 2.6, on page 38, identifies the progression of cost estimates for the Merced-Fresno-Bakersfield line. The costs begin with committed funds for the completion of the federal scope of work and completion of a Central Valley Segment, and state and regional commitments already made.

The Authority will build on these initial commitments to complete an operational passenger test track initially from Madera to Poplar. Concurrently, we plan to build the extensions to Bakersfield and Merced for passenger operations. In **Chapter 3, Funding and Affordability**, we provide an overview of the funding available aligned with these building blocks.

Merced-Fresno-Bakersfield

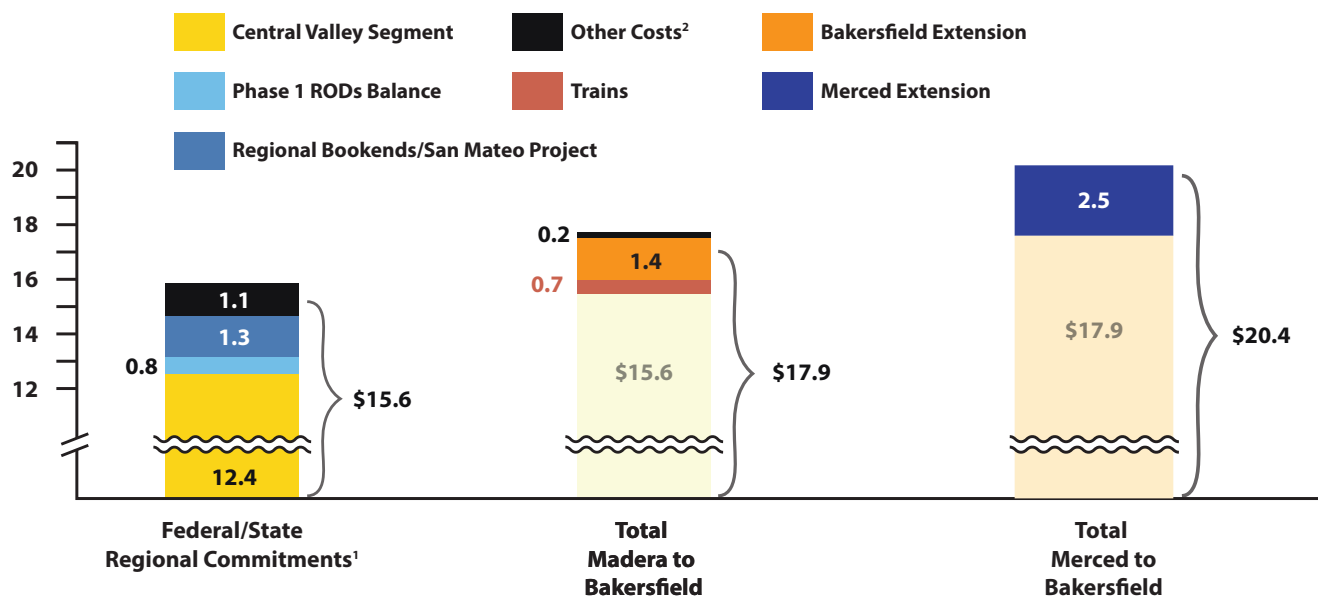
The Authority also conducted a Monte Carlo Risk analysis for the Merced-Fresno-Bakersfield line. The results of that analysis, including the P70 confidence level for that line, as shown on page 38. By also using

a P70 confidence level on this longer segment, the Authority continues to use a prudent, industry best practice approach to manage risks. The Authority's ability to deliver this line within current funding capacity is discussed in **Chapter 3, Funding and Affordability**.

Monte Carlo Analysis Results

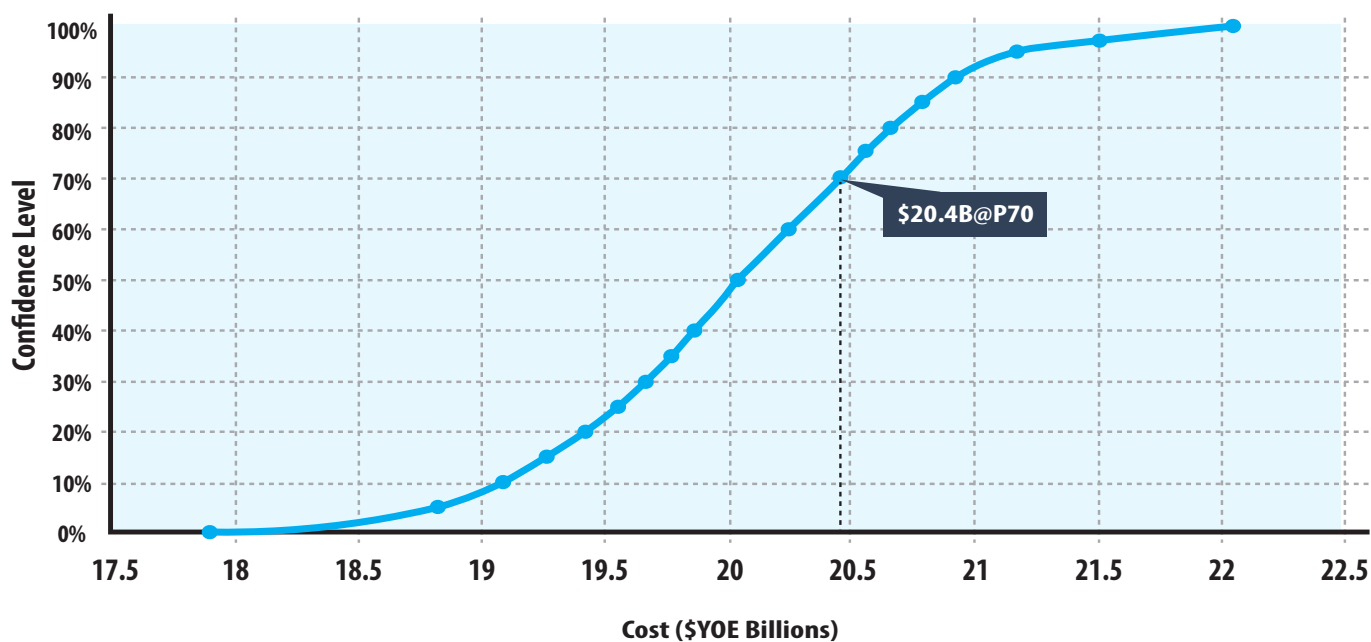
Exhibit 2.7, on page 38, shows the cumulative probability distribution curve for the Merced-Fresno-Bakersfield line that includes the extensions to Bakersfield and Merced, track and systems on these extensions, and the procurement of trainsets, an interim heavy maintenance facility and stations.

This S-curve provides the range of possible costs resulting from design complexity, incomplete stakeholder requirements, technology or market uncertainty, and procurement strategy and other factors. Based on the risk-informed forecast, Authority staff is recommending adoption of a budget of \$20.4 billion (\$YOE) at the 70 percent confidence level.

EXHIBIT 2.6: CAPITAL COST ESTIMATE BUILDING BLOCKS

1. Federal/State/Regional Commitments – These include completion of the Federal grant agreements to complete all Phase 1 Environmental Documents and 119 miles of civil and structural rail infrastructure from Madera to Poplar; completion of state and regional projects including SB 1029 Bookend projects (Caltrain Electrification Project, Rosecrans/Marquardt Grade Separation and Link US) and the regional San Mateo Grade Crossing project.

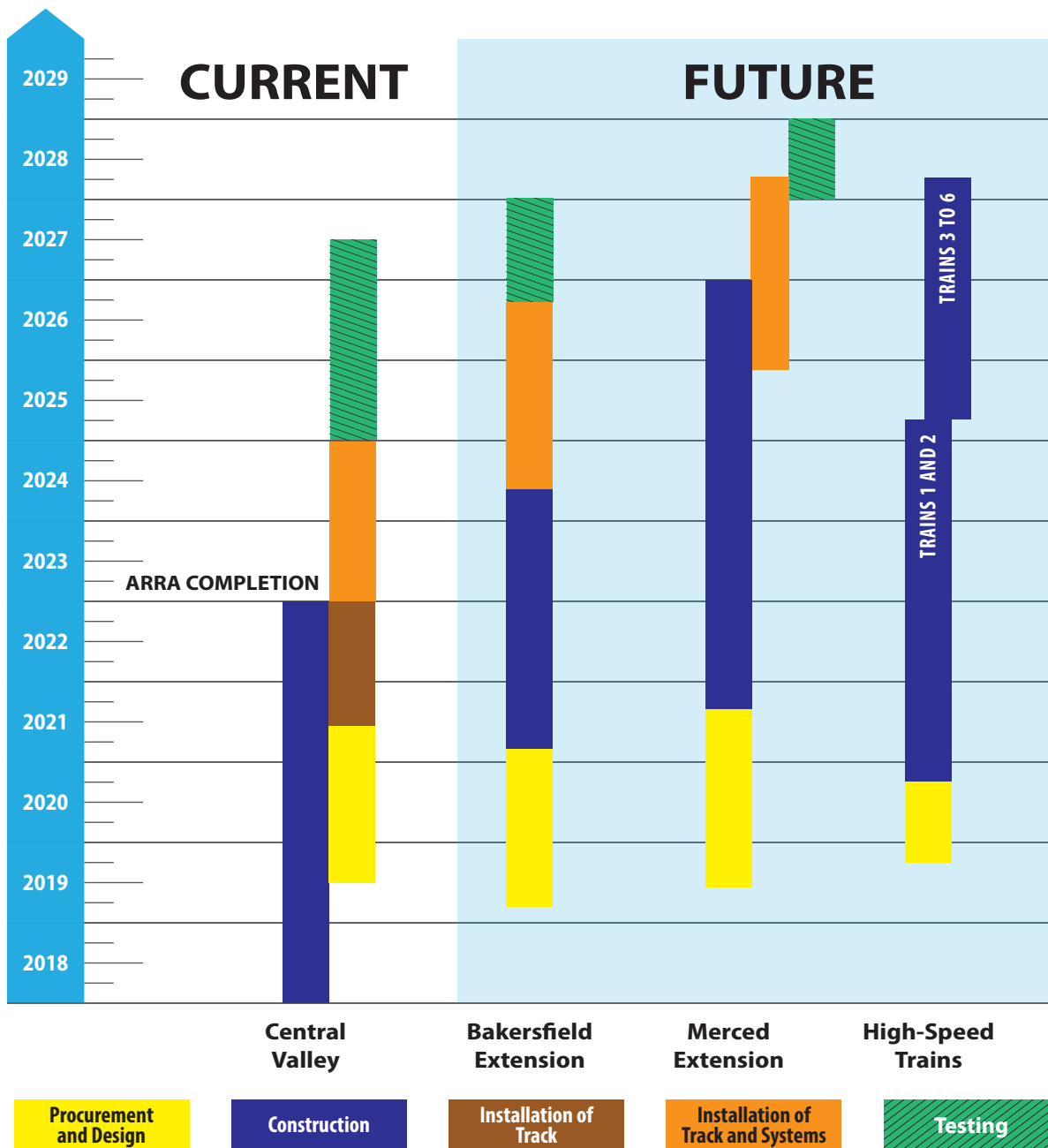
2. Other Costs – Other costs include program support costs and historical Phase 2 expenditures.

EXHIBIT 2.7: MERCED-FRESNO-BAKERSFIELD COST RANGE BASED ON MONTE CARLO ANALYSIS

Schedule

Exhibit 2.8 provides a general schedule for the completion of the work underway and the future work necessary to get to passenger operations. As this schedule shows, the Authority currently expects to meet completion of civil and structural construction and track installation requirements by December 2022 as required in the federal grant agreements. Future schedule time-frames depends on moving forward with future contracts in a timely manner. The Authority will continue to provide the Legislature with updates on our progress and any future developments related to federal participation.

EXHIBIT 2.8: MERCED-FRESNO-BAKERSFIELD PROJECTED TIMELINE



Managing Contingency

Infrastructure programs are complex and risky undertakings with many latent risks at the time of award – encountering different site conditions, third-party requirements and refinements, changed laws and regulations, endangered species and habitats and many others. Successful outcomes require that potential risks be identified and managed. The Authority has a comprehensive risk management approach for forecasting and assigning costs to the potential risks associated specifically with delivering the high-speed rail program. Some risks are within the Authority's control while others are external. Some risks can be mitigated or managed to eliminate or reduce their impact on costs and schedule. Where they cannot be cost-effectively mitigated, contingency funds are used to address these emerging risks. This is considered as best practice on large infrastructure projects.

As part of project development and implementation, the Authority uses a Monte Carlo risk-informed approach to identify and quantify potential risks so that it can establish a contingency allowance. This allowance provides additional funds in the program budget to account for risk mitigation measures. More specifically, contingency funds are designated to be used to address increases in cost resulting from risks that occur after no other mitigation measure is available. For example, in the Central Valley, contingency funds were set aside to anticipate the cost risk associated with unidentified utilities that must be relocated to construct high-speed rail infrastructure. These funds were set aside at a time when the utility conflicts were not fully identified, and the actual costs were not fully known. As the design was advanced, more utility conflicts were identified

than anticipated, therefore as the risk has become "known" funds have been released to pay for these changes.

The Authority establishes and manages contingency funds from the bottoms up on each project/contract. Contract-level contingency accounts are only accessible by Authority managers in accordance with a governance regime that includes a "delegation of authority" that is also approved by the Authority's Board. Contract-level contingency funds can be drawn down when a risk occurs, and the appropriate documentation has been produced and approved through the Authority's governance process. For lower cost risks, the use of contingency funds may be approved by the appropriate contract manager; for risks at higher costs, approval of the use of contingency funds is elevated. The movement of contract-level contingency funds into actual contracts is controlled by the Authority's change management process and is reported to the Board's Finance and Audit Committee on a monthly basis. Access to program-level contingency requires approval by the Authority's Board of Directors to establish contingency funds in a project and/or contract-level contingency account.

Because the nature of the risks associated with delivering a project can evolve, risks are re-evaluated and re-quantified on an annual basis. The allocation of contingency funds throughout the program is considered on a continual basis and more formally when the Board adopts the annual budget at which time contingency accounts may be adjusted according to the changes in the risk exposure that requires Board approval.

Silicon Valley to Central Valley and Phase 1

In our testimony to the Legislature on the 2018 Business Plan, we were clear that delivering a commercially viable Silicon Valley to Central Valley Line and the Phase 1 system will require additional funding. This is not an unusual situation for large transportation infrastructure projects. In addition, the ETO has confirmed that the Silicon Valley to Central Valley Line will be a high-value Authority-run service. We will continue to work with the Legislature, our federal partners and the private sector to identify the additional funding and financing needed to deliver the system.

In the meantime, we are working to build out the system—with the dollars we have—through a building block approach. While the Authority delivers the first building blocks, the ongoing environmental work will lay a foundation to continue construction once funds are identified to connect a revitalized Central Valley to the Silicon Valley and ultimately Southern California. For more information on this environmental work that is underway, see detailed information listed in **Chapter 7: Regional Summaries**.

2018 Cost Ranges

The Authority updated the capital cost estimate for the Phase 1 system in the 2018 Business Plan based upon the progress of project development. As a part of that, the Authority returned to showing estimates within a cost range and where the current point estimate, or “base estimate,” falls within that range. A range is a more appropriate way to show cost estimates given that costs will continue to evolve and change over the life of the program as more

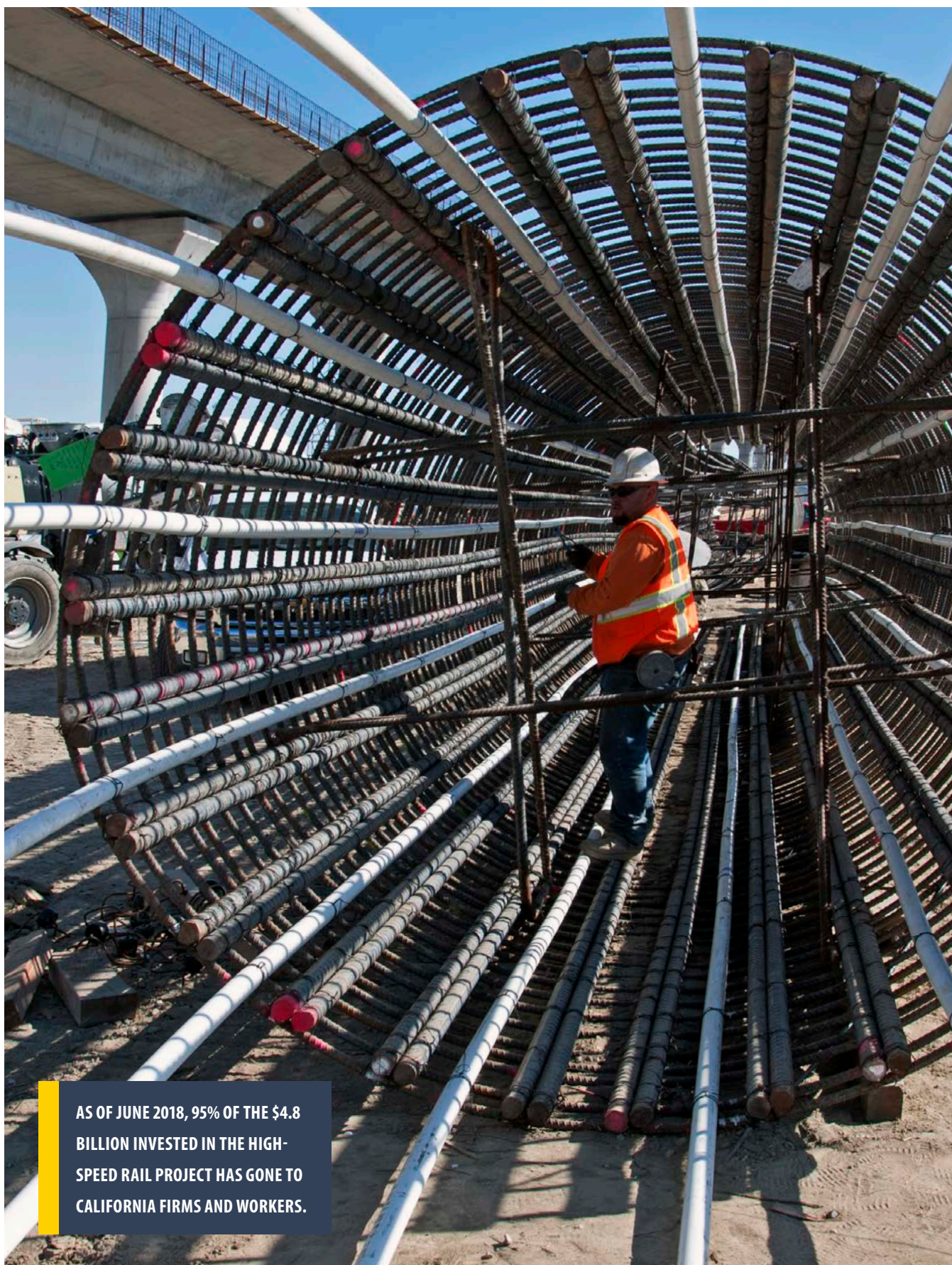
information becomes known, as program decisions are made and as construction progresses and risks are identified and/or addressed.

The Authority’s 2012 Business Plan used a Phase 1 system cost range of \$68.4 billion to \$117.6 billion in year of expenditure (YOE) dollars— a range of \$49.2 billion. This range was based on our phasing plan at that time (which assumed building from the Central Valley south into the San Fernando Valley) and on the schedule assumptions used as the basis for preparing a year of expenditure estimate.

In the seven years since, the Authority has advanced environmental work on project sections and has now identified preferred alternatives for all but the two Northern California sections. Based on the updated knowledge that the Authority now has, the 2018 Business Plan narrowed the Phase 1 system cost range to a low of \$63.2 billion to a high of \$98.1 billion (YOE\$)—a range of \$34.9 billion, as shown in **Table 2.1 and Exhibit 2.9 on pages 43 and 44**.

Table 2.1 on the following page shows the revised Central Valley Segment base estimate and range that is based on the analysis conducted since the 2018 Business Plan and discussed in this report. The base estimates for both the Silicon Valley to Central Valley Line and the Phase 1 system were increased by \$1.8 billion to reflect the additional \$1.8 billion which is comprised of the (1) Central Valley Segment scope changes (\$362 million); (2) higher cost estimates (\$477 million); and (3) the recommended additional contingency for risk (\$990 million). That is the only adjustment made to the Valley to Valley and Phase 1 cost estimates.

The year of expenditure Valley to Valley and Phase 1 cost ranges have been left unchanged for two



AS OF JUNE 2018, 95% OF THE \$4.8 BILLION INVESTED IN THE HIGH-SPEED RAIL PROJECT HAS GONE TO CALIFORNIA FIRMS AND WORKERS.

reasons. First, it would be premature to conduct a Monte Carlo analysis and seek to establish a P-70 estimate on project sections that are still relatively early in the project development and decision-making process. Second, the schedule assumptions for these year of expenditure estimates are based upon unrestricted access to funds. In other words, the cost estimates assume that funding will be available to meet civil construction demands as necessary beyond the completion of the Central Valley Segment. If funding is not available and construction is postponed, the cost estimates do not include the escalation costs associated with time.

TABLE 2.1: UPDATED PROGRAM BASE POINT ESTIMATES AND REVISED CENTRAL VALLEY SEGMENT RANGE (\$YOE IN BILLIONS)

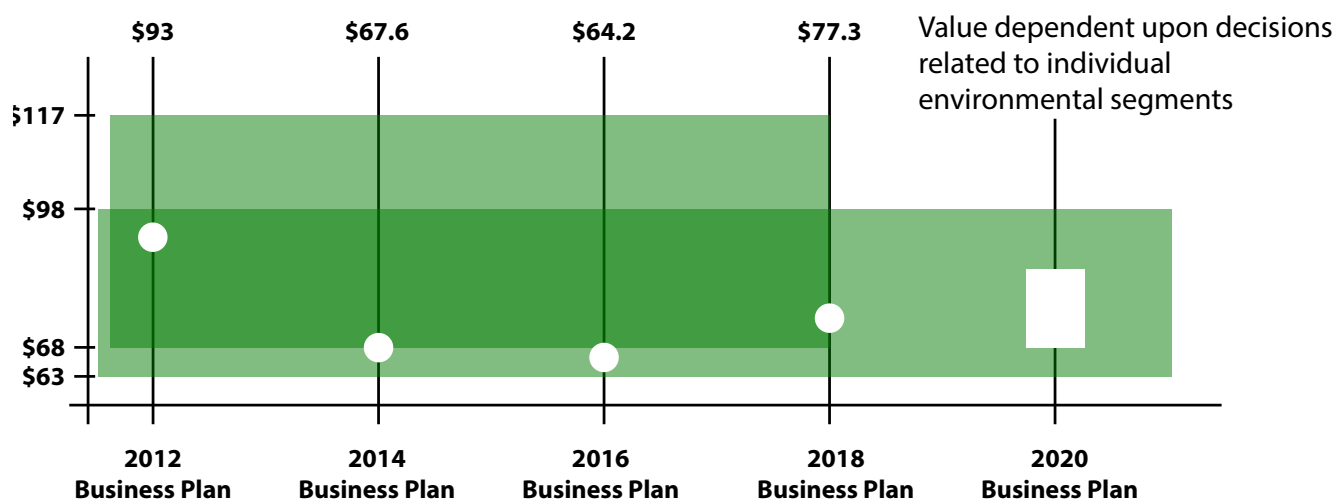
Project Segment	Low	Base	High
Central Valley Segment*	\$10.8	\$12.4	\$13.5
Silicon Valley to Central Valley**	\$25.1	\$31.3	\$36.8
Phase 1***	\$63.2	\$79.1	\$98.1
<p>*Costs based on information presented in this 2019 Project Update Report. **\$YOE based on completion date of 2029, per the 2018 Business Plan. ***\$YOE based on completion date of 2033, per the 2018 Business Plan.</p>			

Exhibit 2.9, on the following page, shows the previous Phase 1 2012 capital cost range (\$68 billion to \$117 billion), the current 2018 range (\$63 billion to \$98 billion) and overlays the progression of Phase 1 system point estimates since 2014 within those ranges. As this graphic shows the range of program costs have changed since 2012. That range has reduced and

has lowered over time, although point estimates continue to vary within these ranges based upon the information known at the time.

The completion of the Silicon Valley to Central Valley line (San Francisco to Merced and Bakersfield) would follow as funding is available. The cost estimates for these future phases identified in the 2018 Business Plan have not been updated and remain within the ranges identified. Other than for the increases noted for the completion of the Central Valley Segment, these estimates remain unchanged from the 2018 Business Plan. While the Central Valley increases will affect the totals in the end, schedule impacts and the corresponding effect of inflation will also cause these number to evolve.

The established ranges are based on the information known at this time, assuming all funding is available when needed. For example, the range for the Silicon Valley to Central Valley Line is wider because design is less advanced and some decisions are yet to be made. Contrast that to the narrower range for the Central Valley Segment, where construction is underway. Again, the ranges remain the same from the 2018 Business Plan.

EXHIBIT 2.9: EVOLUTION OF PHASE 1 SYSTEM COST ESTIMATES (\$/YOE IN BILLIONS)

Cost Comparison by Segment

Legislative Requirement: This section covers statutory requirement (c) The current and projected budget, by segment or contract, for all project phase costs.

Legislative Requirement: This section covers statutory requirement (b) The baseline budget for all project phase costs, by segment or contract, beginning with the California High-Speed Rail Program Revised 2012 Business Plan.

The Authority made significant progress in furthering alignment refinements over the last year. The supplemental environmental evaluations for the Bakersfield Locally Generated Alternative and the Central Valley Wye are complete and are proceeding

through the public review processes. The Authority Board accepted staff recommendations for preferred alternatives for southern California at the October and November 2018 Board meetings.

Exhibits 2.10 – 2.13, on pages 46 and 47, compare the estimate progression over time for each project section and for the program’s operational elements, maintenance facilities and trainsets. The figures continue to demonstrate the theme that costs become more refined with better information.

It is important to be careful when making any direct year-to-year comparison. For purposes of tracking cost changes over time, costs can change based on new alignment recommendations, changed section start- and end-point assumptions, and the assignment of certain costs, such as light maintenance facilities, to project sections. In addition, coordination with

community and regulatory stakeholders can change alignment assumptions, creating cost increases or decreases.

Finally, the estimates on the following pages have also changed based on different phasing strategies that affected how cost escalation is applied to various sections based on revised phasing strategies. For example, the 2012 and 2014 Business Plans assumed a different phasing plan than the implementation strategy today. Specifically, prior plans identified Merced to San Fernando Valley as the initial line for revenue service, but the 2016 Business Plan introduced the Silicon Valley to Central Valley Line as the initial line for service. This change in sequencing and timing affects the calculation of the year of expenditure costs.

The figures for the Merced to Fresno and Fresno to Bakersfield segments also have not been updated to include the cost estimate changes noted on the Central Valley Segment or construction of a Merced-Fresno-Bakersfield line. These cost estimates will be updated as part of the 2020 Business Plan to maintain continuity between comparison years.

The Authority updated estimates since the 2017 Project Update Report to reflect changed assumptions:

- The costs of the light-maintenance facilities were removed from the maintenance facilities category in the 2018 Business Plan and added to the applicable project sections; and
- The heavy maintenance facility category was reduced.

Other changes made in previous reports have also included:

- The 2015 Project Update Report allocated approximately \$8 billion in system wide costs across each of the project sections. These system costs included approximately \$4.4 billion for high-speed rail trains (vehicles), \$1.5 billion for program, project and construction management costs, and \$2.3 billion in unallocated contingency funds; and
- In the 2016 Business Plan, costs for high-speed rail trains and maintenance facilities were separated as independent cost categories and costs removed from individual sections. This more accurately reflects the system's operational requirements as opposed to being allocated based on an individual segment length. Program, project and construction management costs, as well as unallocated contingency, continue to be included in individual project sections.

The 2018 Capital Cost Basis of Estimate Report provides a detailed analysis of the updated construction cost estimates, how they were prepared, how the cost estimates changed and why. The report was prepared as a technical supporting document to the 2018 Business Plan. http://www.hsr.ca.gov/docs/about/business_plans/2018_Business_Plan_Basis_of_Estimate.pdf

FIGURE 2.10: CAPITAL COST ESTIMATE CHANGES BY SEGMENT SINCE 2012 (CONSTANT YEAR DOLLARS IN MILLIONS)

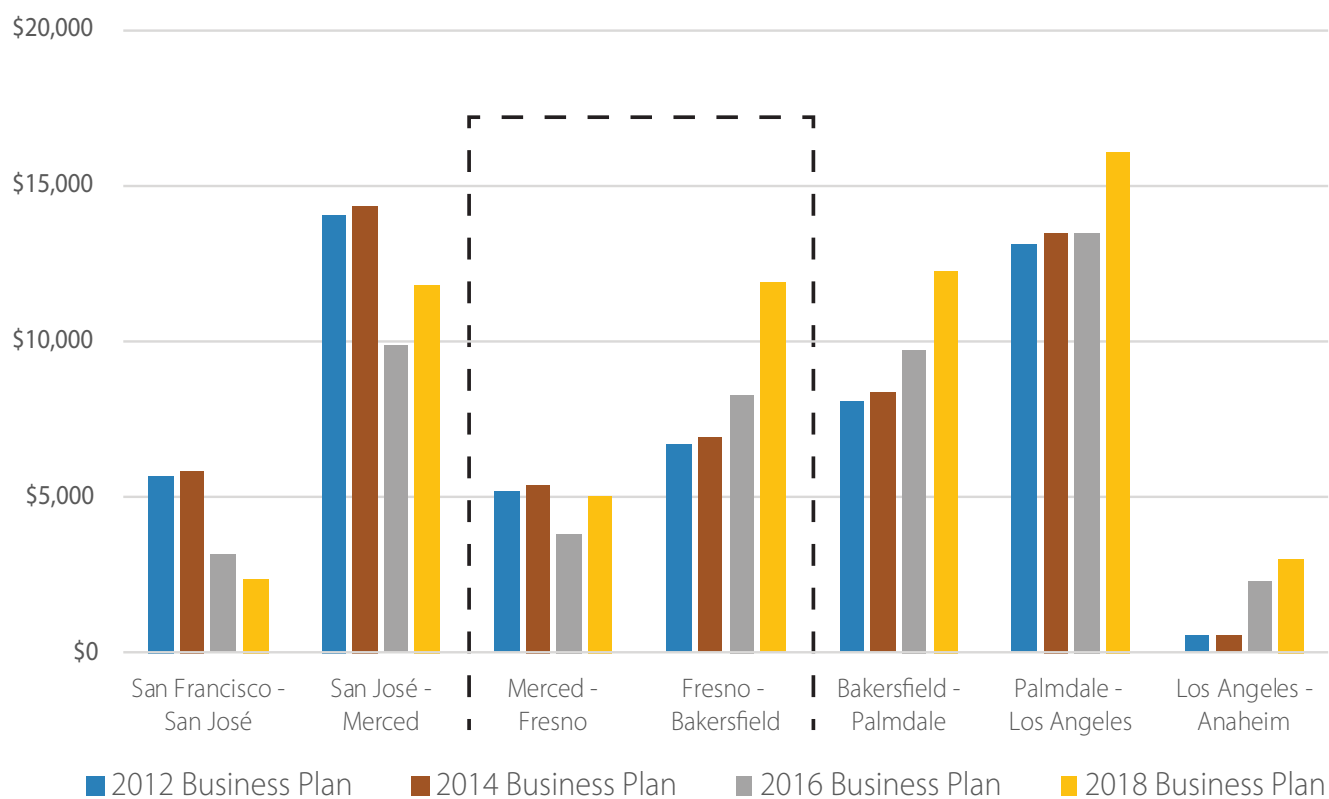


FIGURE 2.12: MAINTENANCE FACILITY AND TRAIN SET COST (IN MILLIONS)

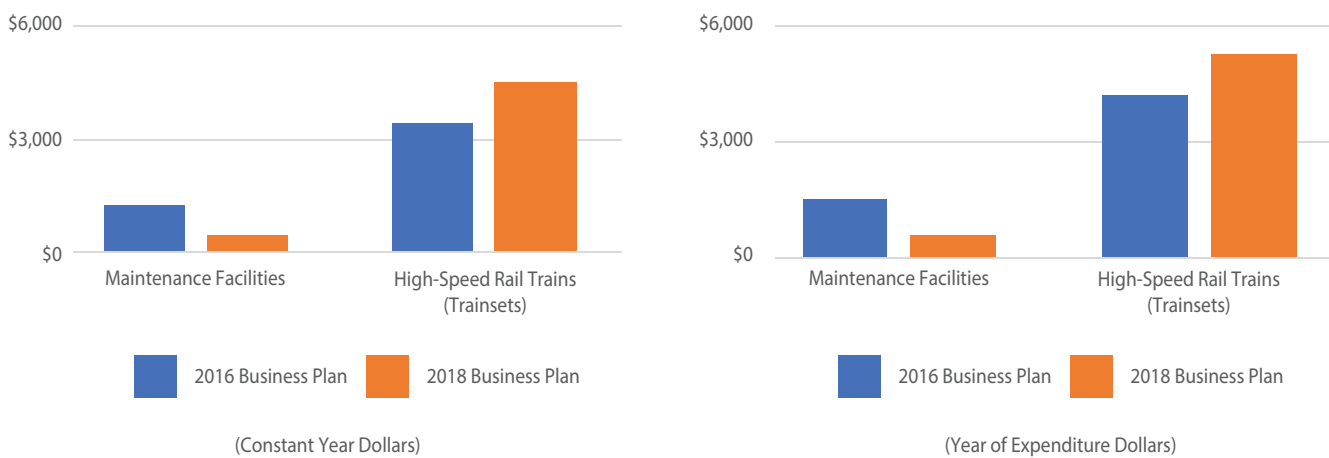
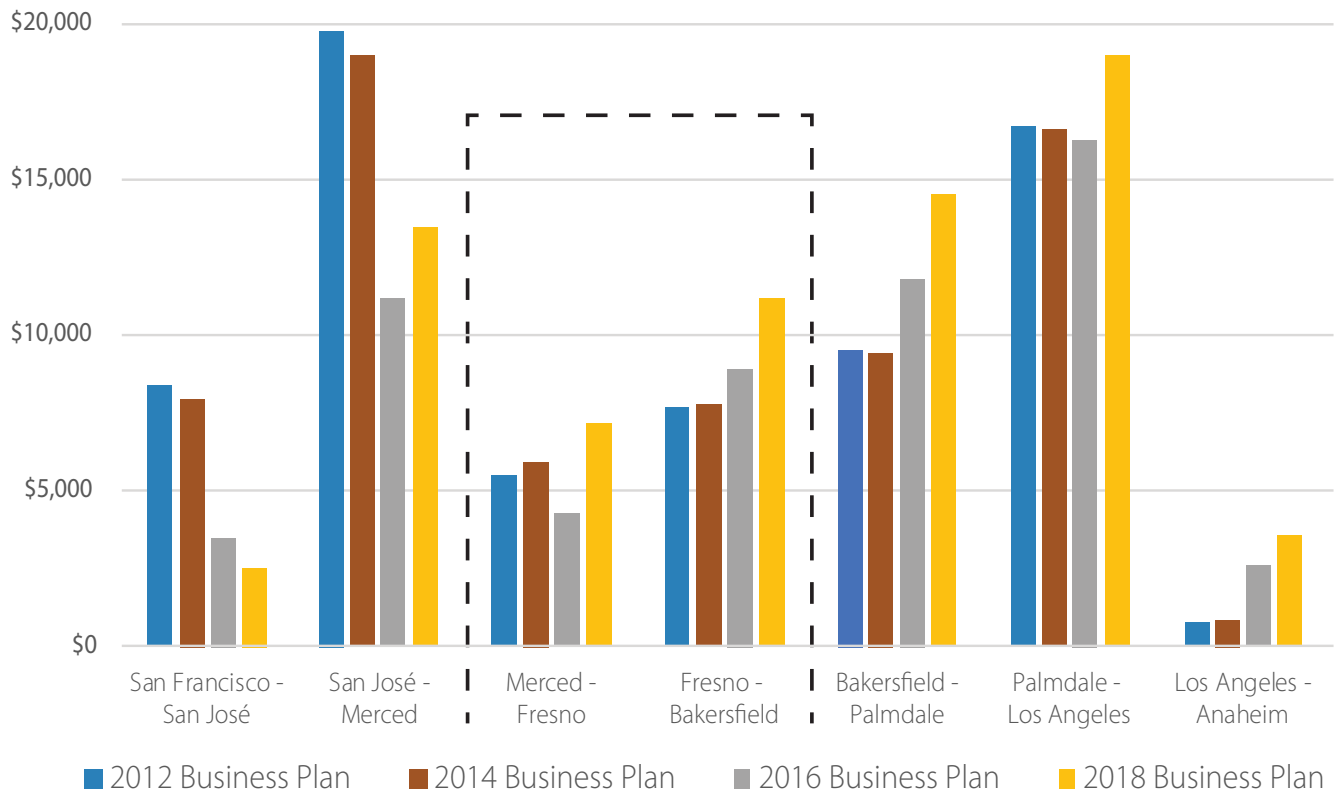
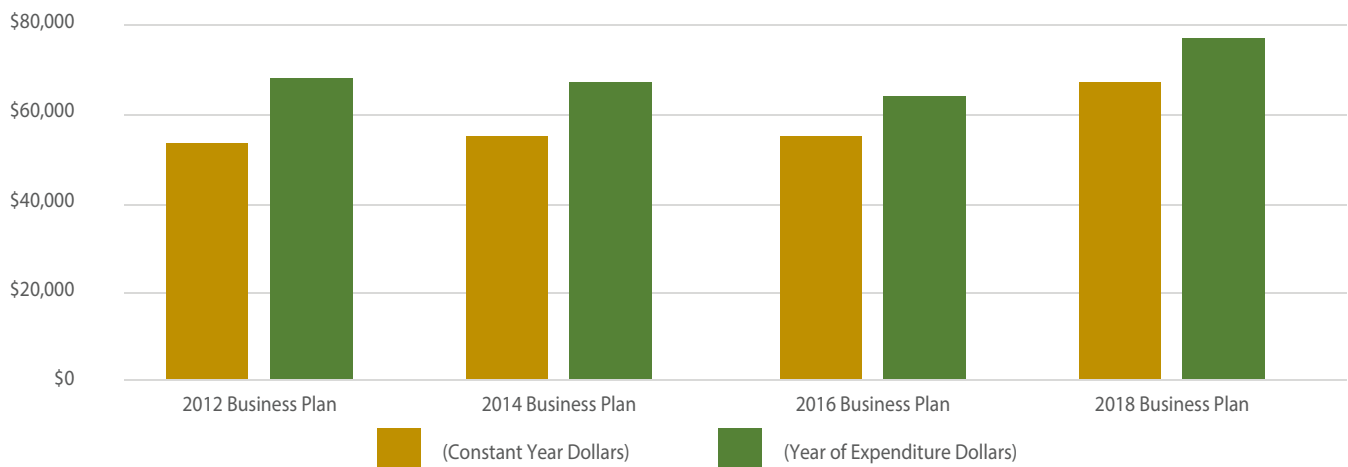


FIGURE 2.11: CAPITAL COST ESTIMATE CHANGES BY SEGMENT SINCE 2012 (\$YOE IN MILLIONS)**FIGURE 2.13: TOTAL PHASE 1 SYSTEM COST ESTIMATES SINCE 2012 (IN MILLIONS)**

Baseline Schedule Comparison

Legislative Requirement: This section covers statutory requirement (e) The A comparison of the current and projected work schedule and the baseline schedule contained in the California High-Speed Rail Program Revised 2012 Business Plan.

The schedule comparison below shows generally how completion of the Phase 1 system has changed over time. It is important to note, that completion of Phase 1 has always been for planning purposes and based upon funding being available as construction progressed. Based on the 2018 Business Plan the projected completion of Phase 1 has extended from 2028 in the 2012 Business Plan to 2033 in the 2018 Business Plan.

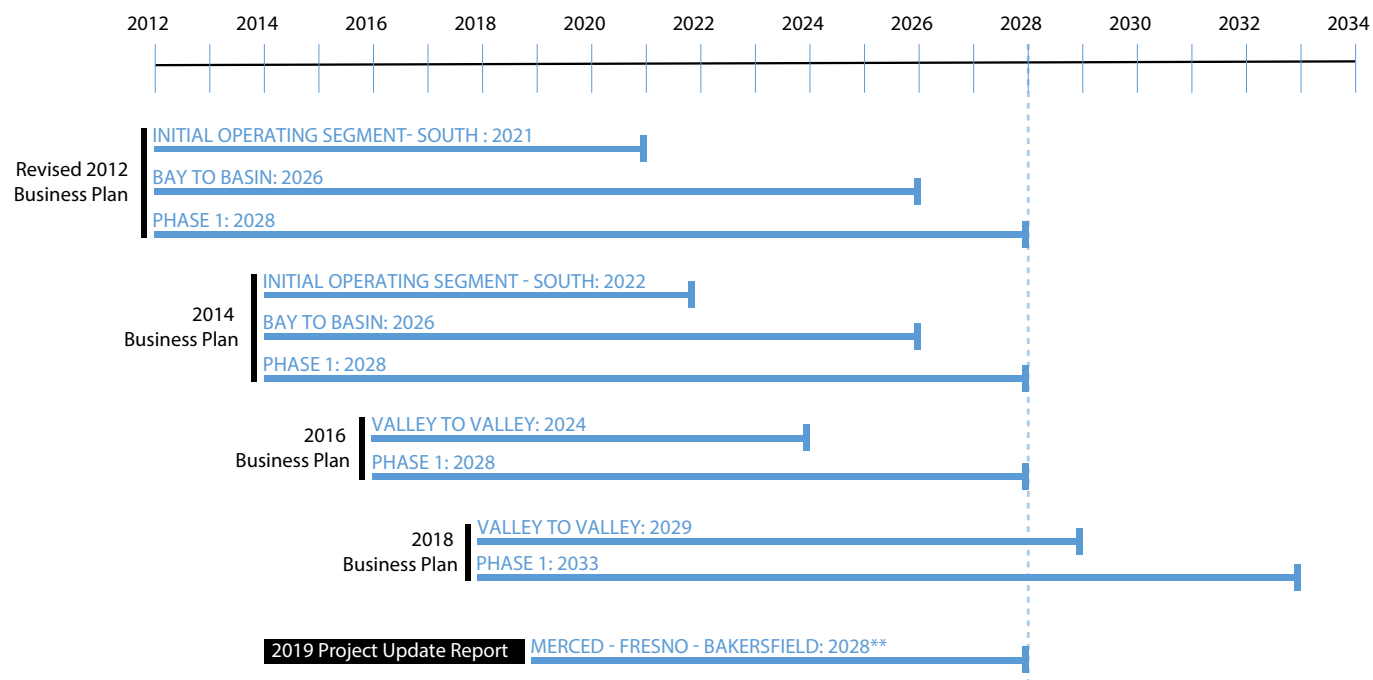
In addition, over time the Authority has modified its phasing strategy for how and when it proposes to deliver the Phase 1 system. In the 2012 Business Plan, the Authority proposed delivering the Phase 1 system in three stages starting with an initial operating segment (IOS-South) linking the Central Valley to the San Fernando Valley, followed by a second step—Bay to Basin—and then the third step completing the full system. As noted below, the Authority modified this

approach in the 2016 Business Plan, switching from the IOS-South to the Central Valley to Silicon Valley Line (IOS-North). This change was made given that in 2016 it appeared that a funding and financing plan could be developed to fully fund the Valley to Valley line. For that reason, the schedules for these very different phasing plans are not comparable.

Again, as discussed earlier in this chapter, the Authority has not modified the completion dates for the Silicon Valley to Central Valley Line and Phase 1 system. Full funding for completing these lines has not yet been identified and these schedules were used as the basis for preparing year of expenditure estimates for the 2018 Business Plan.

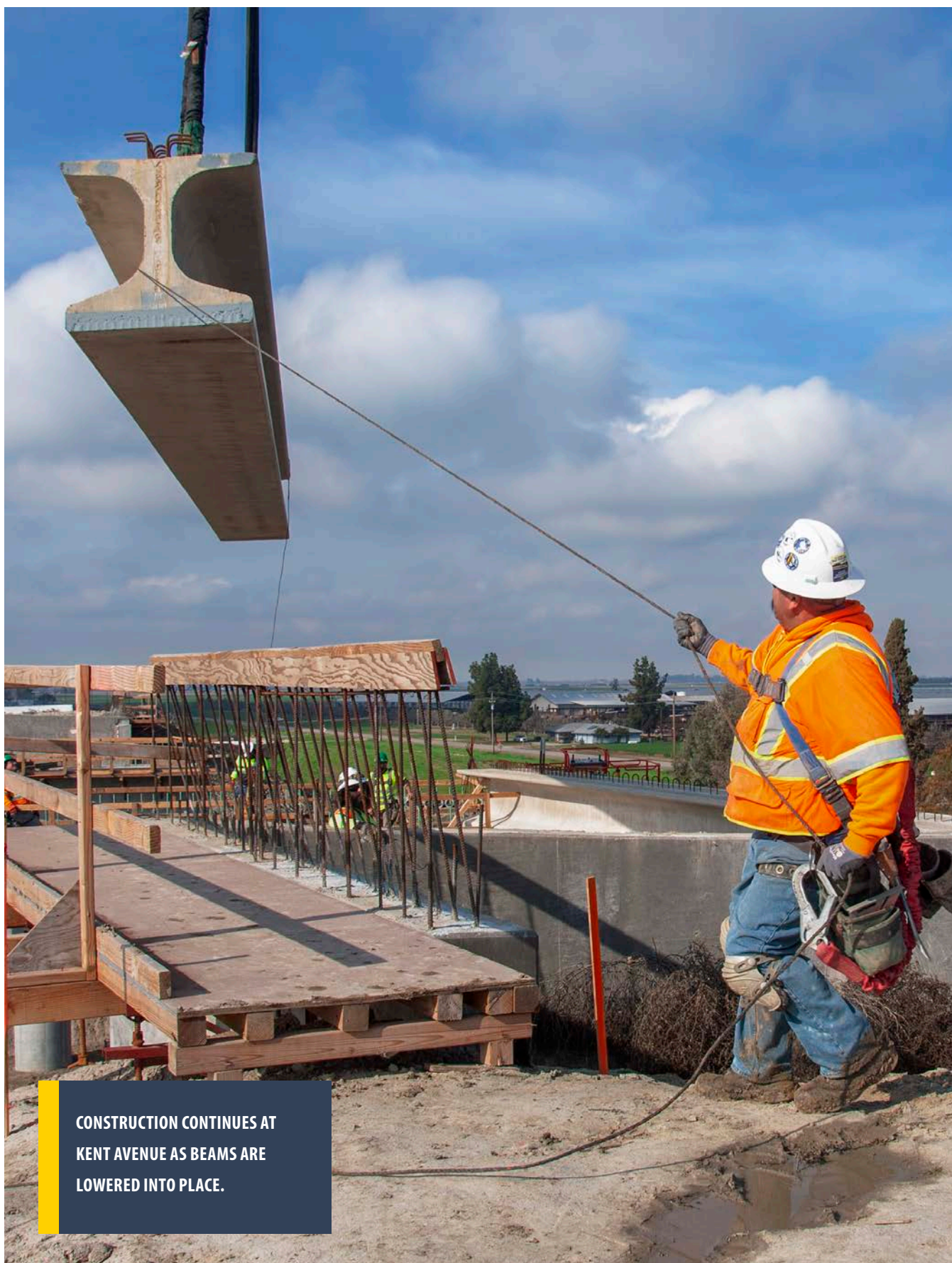
This 2019 Project Update Report adds an early interim service milestone for comparison purposes. The 2018 Business Plan identified a goal of providing service using high-speed rail assets as soon as possible. The Merced-Fresno-Bakersfield line, recommended for implementation in this report, is shown to be completed by the end of 2028.

Exhibit 2.14 compares the baseline schedules from the Revised 2012 Business Plan to this 2019 Project Update Report.

EXHIBIT 2.14: COMPARISON OF BASELINE SCHEDULES SINCE 2012*

*Years indicate by December.

**This schedule assumes FRA re-engagement as a full partner. Because schedules for Valley to Valley and Phase 1 are largely determined by funding availability and federal re-engagement, it is premature to adjust these schedules at this time.



CONSTRUCTION CONTINUES AT
KENT AVENUE AS BEAMS ARE
LOWERED INTO PLACE.



FRESNO

CHAPTER 3: FUNDING AND AFFORDABILITY

Legislative Requirement: This section covers expenditures to date, by segment or contact, for all project phase costs.

This chapter provides an overview of the funding that is currently available to the Authority and funding that is projected to be available in the future. This Project Update Report takes a slightly different tack than the 2018 Business Plan. In that plan, we estimated available revenues assuming an extension of the Cap-and-Trade Program until 2050 and additional statutory to ensure we could finance against those revenues. However, we recognize that, with the enactment of AB 398 in 2017, the Legislature extended the Cap-and-Trade Program

through 2030. Rather than seek or assume funding from another extension, we are focusing on how best to utilize the considerable funding we are projected to have over the next decade.

This chapter reflects the funding available to deliver the scope of work under the federal grant agreement and to meet our commitments to our regional partners for the bookend projects. This chapter also discusses our funding capacity, based on the best currently available estimates, to deliver an interim operating segment in the Central Valley as part of a “building block” approach to delivering California high-speed rail.

Review of Current Funding

Funding for this project has always been constrained. The fact is that we do not have all the funding in hand to construct the full 520-mile system from San Francisco to Los Angeles/Anaheim or even the Silicon Valley to Central Valley segment. Because of this, the Authority is recommending a building block approach to delivering the system that delivers the most with our available funds.

To date, the Authority has secured approximately one third of the total funding needed for the current estimated cost of the statewide system. Specifically:

- In 2009, one year after the passage of Proposition 1A, the Authority received \$2.5 billion in funds made available through the American Recovery and Reinvestment Act of 2009 (ARRA);
- One year later, in 2010, \$929 million in additional federal funding was appropriated by Congress through Fiscal Year (FY10) Transportation, Housing and Urban Development funds;
- In 2012, the California Legislature appropriated \$2.6 billion in Proposition 1A construction funding through Senate Bill 1029 to match ARRA funds and to begin construction in the Central Valley;
- In 2014 the Legislature appropriated \$650 million in one-time Cap-and-Trade funding. In addition, through Senate Bill 862, the Legislature appropriated 25 percent of the annual proceeds from the Cap-and-Trade Program to support the development and construction of the system; and
- In 2017, the Legislature extended the Cap-and-Trade Program through 2030, committing an additional \$5 to \$7.5 billion in projected revenue for advancing the project. The range reflects the fact that annual Cap-and-Trade receipts are variable (more discussion is included below). Since the extension of the Cap-and-Trade Program through the enactment of AB 398 in August 2017, Cap-and-Trade revenues have stabilized, with the Authority's share being \$1.3 billion.

On February 19, 2019, the FRA Administrator notified the Authority of the FRA's intent to rescind the \$929 million in federal FY10 grant funds. The FRA also indicated that it was evaluating taking back the \$2.5 billion in ARRA funds that were awarded to the Authority and which has been fully expended in compliance with federal requirements and deadlines.

On March 4, 2019, the Authority sent two response letters, strongly contesting the FRA's determination that the project has failed to make steady progress. The response informed Administrator Batory that withdrawing these funds would be unwarranted, unprecedented and harmful, and requested that the FRA re-engage in the high-speed rail program and restore our functional relationship in delivering the program. More discussion of this is included below, as well as in **Chapter 6, Program Risk**, of this report.

As shown in **Table 3.1**, on page 56, the Authority projects a total of between \$20.4 billion to \$23.4 billion in capital outlay funding through 2030. This chapter shows how our current funding sources combine to generate this projected total funding, how the funding can be used to fulfill our commitments and that it provides the funding capacity to deliver a Merced-Fresno-Bakersfield interim operating segment in the Central Valley.

State Funding

To date, the Authority has secured significant funds from both state and federal sources. These funds are being used to deliver the Central Valley Segment and complete environmental planning and other early work for the entire Phase 1 System, consistent with our federal grant agreements.

Proposition 1A

In 2008, voters approved Proposition 1A, which provided \$9.95 billion for high-speed rail planning and construction and for regional connectivity projects. Of this, \$9.0 billion was allocated to the California High-Speed Rail Program, with the balance allocated to Caltrans for local high-speed rail connectivity projects. In 2012, the Legislature appropriated Proposition 1A funds through SB 1029 for the Central Valley Project, bookend projects (Northern and Southern California) and for Phase 1 environmental review costs.

In January 2017, the Authority Board of Directors adopted the Central Valley Segment Funding Plan, which estimated the cost of construction which included track and systems, stations and a heavy maintenance facility scaled to support initial operations from Madera to Poplar. This funding plan provided access to \$2.6 billion in Proposition 1A construction funds appropriated in SB 1029 for the 119-mile segment in the Central Valley that is currently under construction. As of January 31, 2019, the Authority has expended \$1.4 billion of the authorized \$2.6 billion and has put those dollars directly to work in the Central Valley.

Remaining Proposition 1A funds to be appropriated comprise \$4.1 billion for construction and \$100 million for project development. To release the balance of

the construction funding from Proposition 1A, the Authority will need to prepare a further funding plan(s) and comply fully with the requirements of Streets and Highways Code 2704.08.

Cap-and-Trade

To reduce greenhouse gas (GHG) emissions in California, the Legislature authorized the development of a trading system of carbon emissions allowances, also known as the Cap-and-Trade Program. The California Air Resources Board implements the program and oversees the quarterly auctions. In 2014, the Authority received two, one-time allocations of Cap-and-Trade funding totaling \$650 million. In addition, the Legislature continuously appropriated 25 percent of annual Cap-and-Trade funds for high-speed rail going forward.

In July 2017, the Legislature approved AB 398, which was then signed into law by Governor Brown. This legislation implemented several measures to stabilize the Cap-and-Trade Program and extended the sunset date through December 31, 2030. This was another important step by the Legislature toward securing a long-term stable source of funding for the project. Since the bill was passed, the auctions began to yield more consistent results, providing a more stable funding stream.

As of February 2019, the Authority has received \$2.6 billion in Cap-and-Trade funds, which includes the initial \$650 million appropriation and quarterly funds since August 2015. **Table 3.0**, on page 54, shows the results of the quarterly auctions to date.

TABLE 3.0: CAP-AND-TRADE QUARTERLY PROCEEDS FOR HIGH-SPEED RAIL

Cap-and-Trade Funds	Amount
One-Time Cap-and-Trade Allocation (2014)	\$650,000,000
August 2015	\$161,332,633
November 2015	\$164,194,827
February 2016	\$129,246,998
May 2016	\$2,509,168
August 2016	\$2,096,977
November 2016	\$91,077,691
February 2017	\$2,040,971
May 2017	\$127,763,161
August 2017 – AB 398 Enacted	\$140,534,316
November 2017	\$215,703,498
February 2018	\$181,650,870
May 2018	\$169,786,495
August 2018	\$169,935,376
November 2018	\$214,424,268
Sub-total (through December 2018)	\$2,422,297,249
February 2019	\$213,240,593
Total Cap-and-Trade Funding	\$2,635,537,842

Because of the variability of Cap-and-Trade auctions, the Authority established a range of future Cap-and-Trade receipts for purposes of capital planning in its 2018 Business Plan. The low range assumes that the Authority will receive \$500 million per year and the high range assumes \$750 million per year. With the Legislature's extension of the Cap-and-Trade Program through 2030, quarterly auctions have been

strong—an indication that the market has reacted positively to the legislation. As a result, the Authority's receipts have been higher and less volatile. The last four quarterly auctions have yielded \$767 million in proceeds for high-speed rail.

Federal Funding

The Authority has received approximately \$3.5 billion in federal funding commitments to complete environmental review for the 520-mile Phase 1 system and to construct the 119-mile Central Valley Segment between Madera and Poplar.

The \$2.5 billion in ARRA funding was fully expended before the statutory deadline of September 30, 2017, and in compliance with the FRA grant requirement. In accordance with the grant agreements, the Authority is currently matching the ARRA funds with state funds, as shown in **Exhibit 3.0**. Per the terms of the grant agreement, the FY10 funds, along with \$360 million of state matching funds, are scheduled to be the last funding required to complete the federal grants' scope of work. The Authority anticipates drawing down FY10 funds as soon as June 2021.

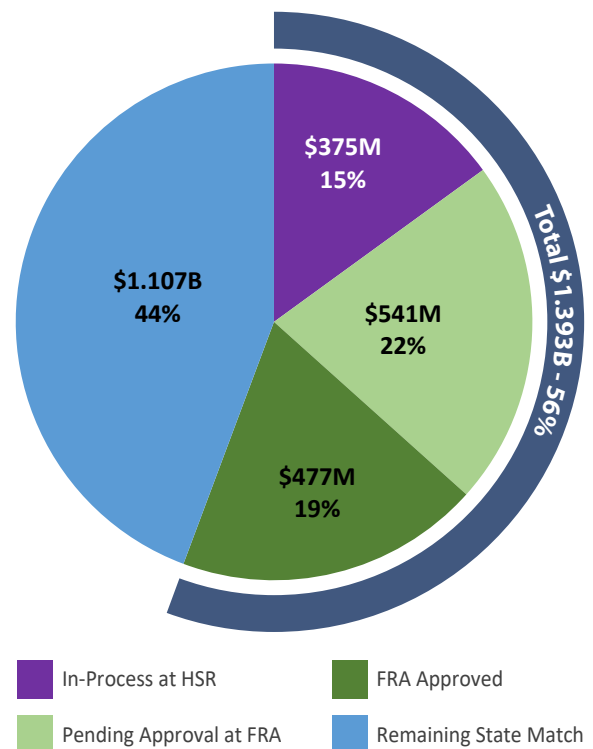
If the FRA de-obligates the \$929 million in FY10 funding, the Authority would work with the California Department of Finance and the Administration on alternative funding sources to complete the Central Valley construction work currently underway. Until the potential de-obligation of the FY10 funds by the FRA is fully resolved, these funds will be at risk. At a minimum, a unilateral federal cancellation of our grant agreement would require the Authority to re-evaluate any early service option in the Central Valley. Additionally, the FRA indicated in its February 2019 letter that it was exploring remedies to reclaim previous ARRA reimbursements and terminate the ARRA grant.

In its February 2019 letter of intent, the FRA indicated that its decision to de-obligate the FY10 funds was based, in part, on its conclusion that the Authority has failed to make "reasonable progress" in meeting its federal commitments. The Authority has challenged

this conclusion based on factual evidence of progress and believes that it has a strong case in this regard (see the Authority's response letter to the FRA in the appendices).

For this reason and for the purposes of this 2019 Project Update Report, we continue to assume that the Authority will receive the \$929 million in FY10 funds in accordance with our agreement with the federal government. And we assume that we retain the \$2.5 billion in federal ARRA funds. At the same time, we clearly recognize that these funds are at risk. If FY10 funds are ultimately not available to the program—and absent any other new funding sources—the Authority would work with the California Department of Finance and the Administration on alternatives. A discussion of how we will manage or mitigate those risks is in **Chapter 6, Program Risk**, of this report.

EXHIBIT 3.0: ARRA STATE-MATCH STATUS UPDATE



Summary of Projected Available Funding and Expended To-Date

Table 3.1 summarizes the total forecasted funding for the project through 2030, how much has been expended through January 2019, and the total remaining funds available. The table shows that there is a range of funding associated with future Cap-and-Trade funds. It also shows the remaining Proposition

1A dollars available to the program. The Authority's ability to use the remaining Proposition 1A funds will require an appropriation by the Legislature and the completion of the statutorily required funding plans (Section 2704.08 (c) and (d), California Streets and Highways Code) demonstrating the funds are for a usable segment. Gaining access to these remaining Proposition 1A funds is also an area of risk to the Authority.

TABLE 3.1: SUMMARY OF TOTAL FUNDING AVAILABLE AND TOTAL FUNDS EXPENDED AS OF 01/31/19 (IN BILLIONS)

Funding Source	Total Authorized Funding A	Total Appropriated / Received	Total Expended to Date B	Total Remaining C = A - B
Federal Funds				
ARRA Construction	\$2.06	\$2.06	\$2.06	-
ARRA Planning	\$0.49	\$0.49	\$0.49	-
FY10	\$0.93	\$0.93	-	\$0.93
State Funds				
Proposition 1A Planning	\$0.68	\$0.58	\$0.43	\$0.25
Proposition 1A Central Valley Segment Construction	\$2.61	\$2.61	\$1.44	\$1.17
Future Proposition 1A for Silicon Valley to Central Valley Line Construction	\$4.17	-	-	\$4.17
Proposition 1A Bookends	\$1.10	\$1.10	-	\$1.10
Cap-and-Trade Received through December 2018	\$2.42	\$2.42	\$0.61	\$1.81
Subtotal	\$14.45	\$10.18	\$5.02	\$9.43
Future Cap-and-Trade*	\$6.00 – 9.00	\$6.00 – 9.00	-	\$6.00 - \$9.00
Total	\$20.45 – 23.45	\$16.18 – 19.18	\$5.02	\$15.43 – 18.43
*Future Cap-and-Trade funding assumes a low of \$500 million to a high of \$750 million per year from 2019 to 2030 (12 years). The Authority's February 2019 Cap-and-Trade quarterly auction receipt was \$213 million, and is not yet included in the total.				

Program Affordability

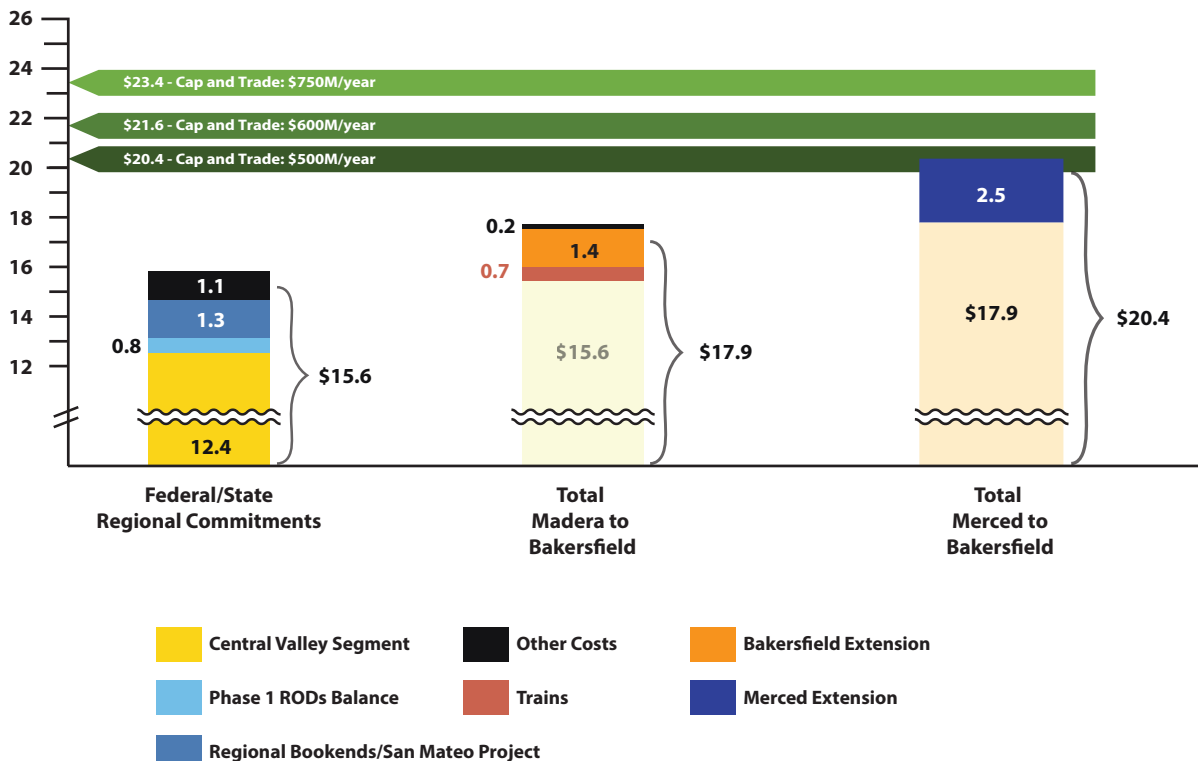
Exhibit 3.1 shows that based on current cost estimates and funding projections, there is sufficient funding to complete the federal ARRA grant scope—construction of the project between Poplar Avenue and Madera, including track, and to complete the environmental reviews for the Phase 1 system. The table also shows there is sufficient funding to both meet the federal scope and fulfill our commitments to our regional partners for the bookend projects. Further, it shows that there is sufficient funding to complete the Central Valley Segment, which adds stations, systems and a scaled maintenance facility.

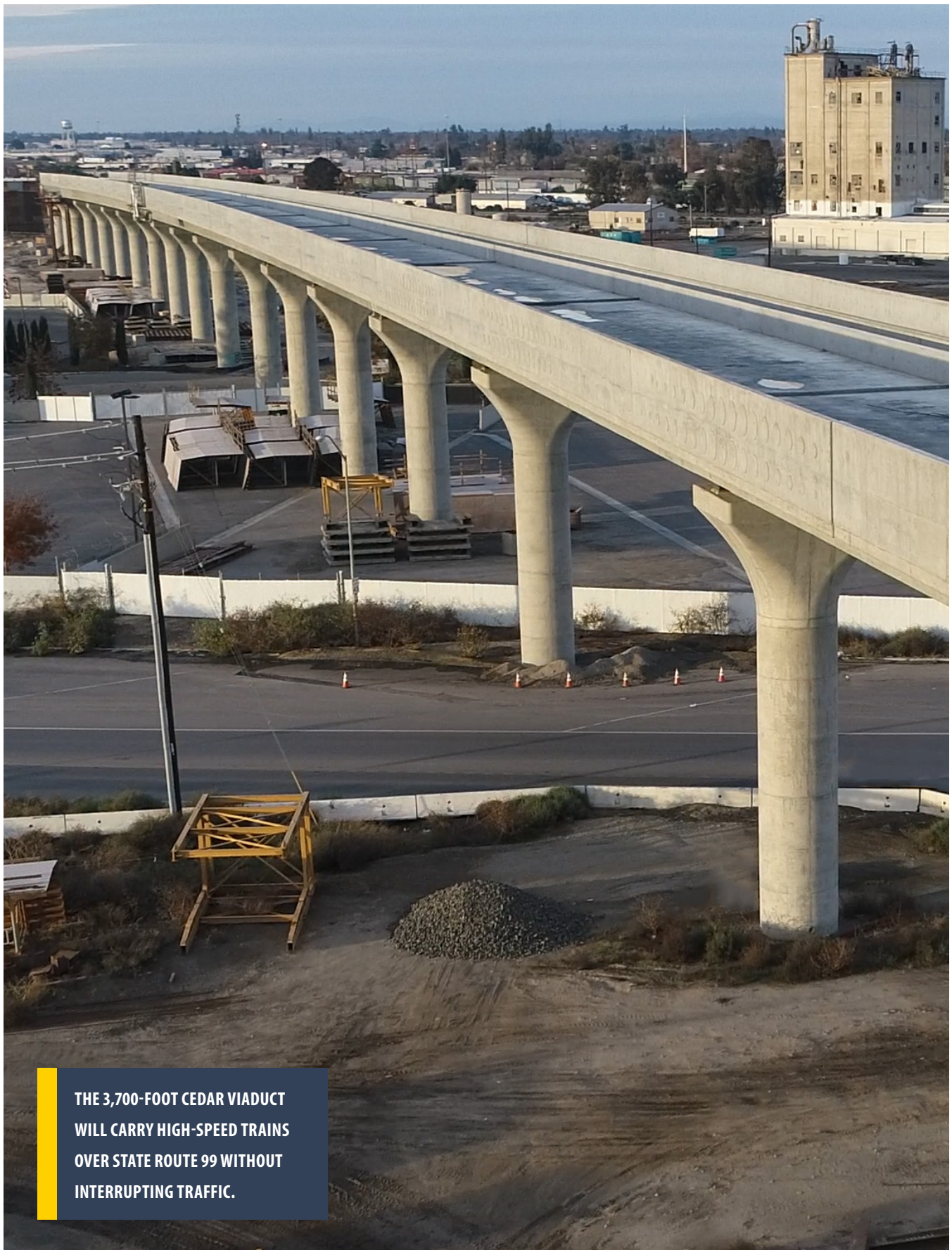
In addition, we project that the Merced-Fresno-Bakersfield line is within our funding capacity. This is a snapshot of the funding projected to be available for the project and the current cost estimates at this point in time, which are dependent on the following conditions:

- A stable Cap-and-Trade Program through the current statutory sunset of 2030;
- The Authority retains all federal funds appropriated for the project;
- The remaining Proposition 1A bond funds are appropriated by the Legislature;
- There are no significant future increases in the current Central Valley construction costs or the cost estimates for the Merced and Bakersfield extensions; and
- The FRA re-engages with the Authority in the very near future, minimizing any higher costs that would result from delays.

Some of these risks are discussed at the end of this chapter and/or in **Chapter 6, Program Risk**.

EXHIBIT 3.1: FUNDING SOURCES COMPARED TO PROJECT COST ESTIMATES (\$YOE IN BILLIONS)





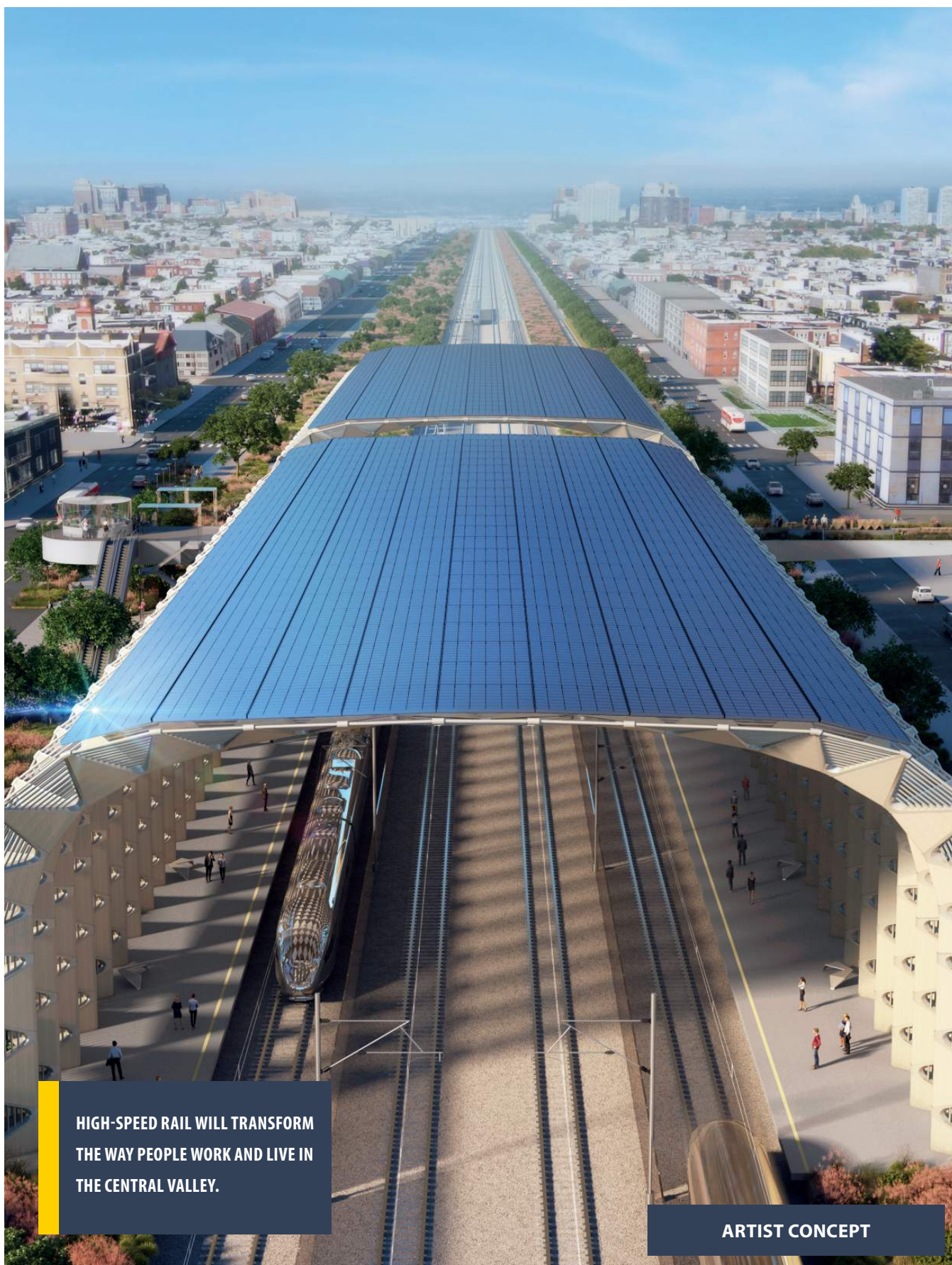
**THE 3,700-FOOT CEDAR VIADUCT
WILL CARRY HIGH-SPEED TRAINS
OVER STATE ROUTE 99 WITHOUT
INTERRUPTING TRAFFIC.**

If Cap-and-Trade funding stays at the current stable level, we can deliver the Merced-Fresno-Bakersfield line, all environmental documents and all current bookend commitments on a pay-as-you-go basis by 2028. If Cap-and-Trade revenues come in below today's stable level, the Authority will need to pursue short-term borrowing to advance funds to deliver the segment by 2028.

Funding Risks

The funding section in **Chapter 6, Program Risk**, details the key risks relating to each of the funding sources. In summary, there are four primary funding risks relating to the program as follows:

- The future of federal FY10 funds remains uncertain. It is possible that the Authority will lose access to those funds, which would result in total available funding being reduced by \$929 million. If that occurs, the Authority would work with the California Department of Finance and the Administration on alternatives.
- There are currently no funds committed or appropriated for the project after 2030. Absent new state or federal legislation, this will have implications for long-term contracts that the Authority plans to procure.
- The Cap-and-Trade Program experienced a period of volatility during 2016 and 2017 that resulted in lower than expected receipts for the project. Since the passage of AB 398 in July 2017, the quarterly auctions have been more stable and robust. However, the potential for future volatility could affect the Authority's long-term planning, its ability to award contracts based on assumed future proceeds and/or create cash flow challenges. If Cap-and-Trade funds trend on the lower end of projections the Authority will work with the Department of Finance to advance future proceeds into 2028, or earlier, to meet cash flow needs.
- The remaining \$4.2 billion in Proposition 1A funds have not yet been appropriated by the Legislature. To facilitate the appropriation, funding plans must be prepared and demonstrate that the requirements of Proposition 1A have been met. There remains a risk that these funds may be delayed. This could have schedule and cost implications for the project.



**HIGH-SPEED RAIL WILL TRANSFORM
THE WAY PEOPLE WORK AND LIVE IN
THE CENTRAL VALLEY.**

ARTIST CONCEPT



CHAPTER 4: IMPLEMENTATION PLAN

Since the adoption of the 2018 Business Plan by the Authority's Board of Directors in May 2018, we have focused on advancing the work we laid out for ourselves in that plan:

- First, our Early Train Operator (ETO), DB Engineering and Consulting USA, reviewed our capital cost estimates;
- Second, we updated the Estimates at Completion of individual projects and conducted a Monte Carlo risk analysis of our Central Valley cost estimates to determine whether our range-based approach should be further updated; and
- Third, the ETO analyzed potential early interim service options both in the Central Valley and in the Caltrain corridor in the Bay Area. The results of this work are discussed in **Chapter 1: Early Interim Service Analysis, Chapter 2: Capital Cost Review, and Chapter 3: Funding and Affordability.**

Based on this, we have updated Central Valley cost estimates that have increased our confidence in the program estimates considerably (mainly by increasing the contingency for known and unknown risks by 200 percent). The ETO also recommended that a Merced-Fresno-Bakersfield line, as part of an integrated state network connected to the San Joaquins and ACE

services, is the highest performing Central Valley alternative for interim service.

Further, the ETO concluded that most of the early benefits of interim service in the Caltrain corridor between San Francisco and Gilroy will be captured by the Caltrain Electrification Project that is underway and that we are helping fund. Therefore, the ETO does not recommend an early high-speed rail service section from the 4th & King Station in San Francisco to Gilroy. Operating in parallel to the Caltrain service only competes with a well-established commuter rail corridor that will be substantially improved by Caltrain by 2022. Therefore, the ETO does not recommend that the Authority operate high-speed service until completing the connection to the Central Valley.

Based on this work, the Authority is making a series of recommendations to be discussed with the Authority Board of Directors over the next year. This chapter outlines some of those recommendations and the actions that will be necessary to move the program forward.

Policy Recommendation: Merced-Fresno-Bakersfield

Based on this, we are making a policy recommendation to pursue a Merced-Fresno-Bakersfield interim operating segment to provide high-speed rail service to Californians at the earliest possible time and in a manner that leverages the maximum degree of connectivity to other improving rail services, while important project development work also continues in other parts of the state.

Specifically, this project development work includes the environmental clearance for all San Francisco to Anaheim project segments by 2022 and targeted bookend investments in the Bay Area and Los Angeles. Completing this project development work is an important prerequisite to further refine our designs and cost estimates and to pursuing additional funding to connect a revitalized Central Valley with the Bay Area and Southern California.

This policy recommendation is not a Central Valley line *instead* of the Silicon Valley to Central Valley Line (Valley to Valley), it is a Central Valley line *first*—as we work toward completing the Silicon Valley to Central Valley Line and then connecting Bakersfield to Los Angeles. We propose to proceed in a building block approach for delivering the full high-speed rail system as funding becomes available. This approach also leverages the improvements being made by the Valley Rail Project and other related capital investments (totaling over \$1.3 billion), which will bring much better service to the northern Central Valley on both ACE and the San Joaquins services.

At least 10 trains per day, across both services, will connect Merced to Sacramento, the Tri-Valley, the East Bay and San José, with a significant increase in the number of direct trains. In the south, much shorter bus connections from Bakersfield, where the San Joaquins service currently terminates, are being planned to allow for Southern California train transfers to occur close to Santa Clarita, rather than requiring a bus ride all the way to and from downtown Los Angeles. These improvements are critical to growing ridership and revenue on the integrated passenger rail system.

This is a realistic and pragmatic approach for using the considerable revenues available for this program

between now and 2030, to fulfill not only our federal commitment but also our commitments to our regional partners. It is an approach designed to put our high-speed rail assets to work in a meaningful way and with independent utility. This will demonstrate the benefits of high-speed rail service at the earliest possible time while seeking additional funding to expand the system to San Francisco and to Los Angeles/Anaheim.

We make this recommendation mindful of available funding, federal requirements and the risks associated with our future relationship with our federal partner, the FRA. This approach is wholly consistent with the objectives for an early interim service required by the FRA. Plans for interim service were submitted to the FRA in 2013 and 2016. The 2016 plan—First Construction Package Utilization Plan and Concept of Operations Update—was developed in the event that the full Silicon Valley to Central Valley service was delayed due to funding constraints. These plans focused on how to provide interim operations over the 119 miles of high-speed rail infrastructure that the federal government is helping fund between Madera and Wasco/Poplar.

Our recommendation is to expand the 119-mile segment selected by the FRA in 2010 (the length of the segment was 2.5 miles shorter in 2010 but was changed in 2016 to 119 miles via a grant amendment) to a 171-mile line extending north to Merced and south to Bakersfield which will improve connectivity and maximize interim ridership. On April 22, 2019, the Secretary of CalSTA, Brian Annis, sent a letter to the Authority and the FRA supporting this expanded approach to interim operations; it is included in the appendix to this report. All agencies associated with this effort will work closely with the City of Merced to determine the optimal station location to maximize connectivity.

Current Services in the Central Valley

Today, the Central Valley is served by the San Joaquins and ACE rail systems. The San Joaquins service operates from Sacramento to Bakersfield and from Oakland to Bakersfield with a network of buses connecting the rail service to destinations throughout the state (as far north as Redding and McKinleyville, east to Reno, South Lake Tahoe, Yosemite and Las Vegas, and south to destinations throughout southern and coastal California). Approximately two-thirds of all San Joaquins riders utilize at least one connecting bus.

The San Joaquins corridor is managed by the San Joaquin Joint Powers Authority (SJJPA), which contracts with Amtrak to operate the service. The rail equipment is mostly owned by the State of California— Caltrans Division of Rail and Mass Transportation. Because the fares collected for the service do not cover the full cost of operations and maintenance, Caltrans subsidizes the difference, not unlike most public transportation systems. The San Joaquins service operates on privately-owned freight rail corridors owned by UPRR and BNSF.

The ACE commuter rail service connects the northern Central Valley to the Bay Area. ACE does not currently connect directly to Merced. However, ACE is partnering with the SJJPA to invest in Valley Rail, which will extend services to several new stations between Merced and Sacramento, allowing many more markets to have direct access to both Merced and the Bay Area.

What We Propose

The overall operational concept evaluated by the ETO and recommended by Authority staff is regional intercity service linking Merced-Fresno-Bakersfield where service operating on high-speed rail assets integrates with existing regional rail service at Merced and bus connections at Bakersfield. This approach allows more frequent and reliable service, shorter travel times, higher ridership and a higher percentage of operating and maintenance costs to be covered by fares. Several assumptions underlie this concept, including cross-platform connections between San Joaquins and high-speed rail trains at Merced and an enhanced connection to ACE services at Merced.

Next Steps in Developing an Implementation Plan

The Authority now needs to move forward with the next phase of planning and decision-making for an operational system. We are poised to advance work on a detailed Merced-Fresno-Bakersfield interim service implementation plan. This plan will be developed at the direction of—and with oversight by—the Authority’s Board of Directors, by the California State Transportation Agency (CalSTA), and the California Transportation Commission. It will be developed in close coordination with the SJJPA, ACE and our Central Valley partners, including the local cities and counties along the corridor.

There are many steps and decisions to be made along the way toward implementing this line. These include our first and highest priority—completing the federal scope of work to construct high-speed rail infrastructure on the 119-mile segment between

Madera and Poplar. It also includes completing the environmental review for the extension south to Bakersfield and the Central Valley Wye project, which is the junction point north of Madera for trains traveling north to Merced and, in the future, west to the Bay Area.

Additional work is necessary to more fully evaluate the full range of technical requirements of implementing the Merced-Fresno-Bakersfield line. Further refinements to the capital and operating costs, ridership and revenue estimates must be completed, and the commercial, legal and contractual requirements associated with its implementation need to be developed and addressed. Our planning to date envisions phasing procurements with an eye toward delivering this initial interim service while also planning for system expansion to deliver the Silicon Valley to Central Valley line.

As the Merced-Fresno-Bakersfield plan is developed and advanced, Authority staff will review issues and options with the Board of Directors and identify key decisions that need to be made over the next year. We will provide updates to the Legislature and a major update on our progress and key issues will be included in the Draft 2020 Business Plan, which is slated to be released for public comment in February 2020.

Below is a summary of the key issues to be addressed and major decisions to be made in implementing early service between Merced, Fresno and Bakersfield.

Operations Planning

The ETO will coordinate the additional analysis needed to develop a more detailed operations plan, including how it would connect and integrate

with other passenger rail systems, beyond the initial analysis that it completed to evaluate the interim service options.

The operations plan will include memorandums of understanding, agreements and contracts with the SJJPA, ACE and our Central Valley partners—including the cities of Merced, Madera, Fresno and Bakersfield, and Merced, Fresno and Kern counties—necessary to implement operations. All operations planning and implementation documents will comply with all applicable federal and state laws and regulations.

One of the components that impacts ridership is the number and quality of the connections between services along with the ease of planning and buying integrated trips by passengers. The concept presented here assumes a highly integrated service from Sacramento, Oakland and San José in the Bay area, in Merced and seamless bus transfers south of Bakersfield to Southern California. The work moving forward will include the following steps:

- Continue to develop the integrated service concept and plan working with the San Joaquins and ACE service providers to optimize the connections and maximize the services for passengers traveling between Sacramento, Oakland and San José in the Bay area;
- Design a highly synchronized integrated service timetable for a seamless journey;
- Optimize and integrate ticketing and fare policy for a combined corridor;
- Coordinate with CalSTA, ACE and the San Joaquins to prioritize the additional improvements and infrastructure required north of Merced and development of a joint station at Merced; and

- Evaluate further opportunities to optimize bus connections.

This analysis will also provide the basis for updating the estimated operating costs for operating the interim service between Merced-Fresno-Bakersfield.

Refined Ridership/Revenue Forecasts

A more detailed and specific ridership model will be developed to further evaluate this integrated service network to review ridership and revenue forecasts based on the more detailed service concept. Until this new model has been developed, the existing State model will continue to be used.

Refined Scope, Cost and Schedule Estimates

After the service concept is created and the infrastructure and ridership forecasts are refined, the Authority will further refine the scope and capital investment requirements and schedule. In addition, the investments and improvements in the connecting ACE and San Joaquins services will need to be aligned with the Authority's project delivery schedule and be closely coordinated with CalSTA and our local partners.

Refined Funding and Cash Flow Analysis

As design work is advancing and schedule is refined, we will continue to update our cash flow analysis to match our funding sources with the program uses. Funding is regularly updated to incorporate the latest results from the quarterly Cap-and-Trade auctions.

The Authority will continue to monitor Cap-and-Trade quarterly proceeds against expected trends to allow the implementation of our building blocks approach and advance necessary procurements for the program.

Develop Our Procurement Strategy

The procurement strategy will include developing procurement and contract documents for track and systems, additional civil construction for the extensions to Merced and to Bakersfield, and for the trainsets needed to operate interim service. These procurement and contract documents will comply with all applicable federal and state laws and regulations.

Track and Systems

To meet our federal ARRA requirements, the most immediate priority is to begin procurement of a track and system contract for the line between Madera and Poplar. This is a long-lead, high-priority procurement. Flexibility will be incorporated into this procurement to allow contractors to deliver certain elements in a phased manner that ensures seamless integration as the high-speed rail system is expanded. The track and systems contract will utilize a performance-based model that brings together the best service-proven international high-speed rail experience for application in the United States. This approach will minimize risk and maximize bidding competition.

High-speed Trainsets

Because trainsets are also a very long-lead procurement, this will also be an early and high priority procurement decision for the Authority. As with track and systems, this contract will also utilize

a performance-based model to bring together the best service-proven international high-speed rail experience for application in the United States. It will also incorporate flexibility to allow delivery in a phased manner to ensure seamless integration as the system is expanded.

Operations and Maintenance Facilities

Closely related to the trainsets is the siting of the operations and maintenance facilities that will be required to achieve interim operations. The operational control center and the maintenance of way facility will be incorporated in the track and systems procurement. The heavy maintenance facility will be incorporated in the rolling-stock procurement documents.

Civil Construction

The Authority continues to advance the supplemental environmental reviews for the extension to Bakersfield and for the Central Valley Wye. These environmental documents are pending final public reviews and federal approvals. The Authority has encountered delays in completing these NEPA documents because of the FRA's current disengagement from the project and delay in approving the Authority's request for NEPA Assignment, pending since June 2018. While continuing to seek re-engagement of the FRA to complete NEPA reviews, the Authority has begun coordination work to obtain necessary third-party and environmental permits and approvals.

The Authority will continue advancing the design to refine the full scope of work necessary to complete the civil infrastructure extending the line from Poplar to Bakersfield in the south and from Madera to Merced in the north. The Authority will develop Preliminary Engineering for Procurement documents, which will include improved survey data, value-

engineering, geotechnical investigations, and full utility relocation design sufficient to secure necessary agreements with utilities.

With the advanced design and utility agreements in place, the right-of-way requirements can be defined. This approach will address previous lessons learned by the Authority to better define the right of way necessary prior to initiating construction. Also, it will reduce, and potentially eliminate, some of the challenges faced by the Authority with the current Central Valley construction projects, lessons which were discussed in the 2018 Business Plan.

As part of developing the procurement plan for these civil construction contracts, the Authority is assessing all the lessons learned during the execution of our first three design-build contracts and applying them to

develop the procurement and delivery model for the additional civil works required to deliver the Merced-Fresno-Bakersfield line.

Stations

Terminal and/or intermodal stations not only provide access to the system for people living near the station or nearby communities, they also serve as important hubs to provide seamless transfers and connections to other systems. The Authority will continue to work with our partners and stakeholders for planning the stations along the line to ensure access and connectivity is optimized as part of interim operations.



PHOTO: AVENUE 11 GRADE SEPARATION PROJECT WILL CARRY TRAFFIC OVER BNSF TRACKS AND FUTURE HIGH-SPEED RAIL LINES.

Table 4.0 below shows key implementation milestones associated with the delivery of the Merced-Fresno-Bakersfield line by segment.

TABLE 4.0: MERCED-FRESNO-BAKERSFIELD MILESTONES

Key Date	Madera to Poplar	Extension to Bakersfield	Extension to Merced
2022	<ul style="list-style-type: none"> ■ Federal grant commitments complete 	<ul style="list-style-type: none"> ■ Civil construction underway 	<ul style="list-style-type: none"> ■ Civil construction underway
2025	<ul style="list-style-type: none"> ■ Remaining systems installed and tested ■ Rolling stock prototype begins dynamic testing 	<ul style="list-style-type: none"> ■ Track and systems installation underway 	<ul style="list-style-type: none"> ■ Civil construction continues
2026	<ul style="list-style-type: none"> ■ Rolling stock production units delivered ■ Certification testing begins ■ Driver and crew training on actual equipment begins 	<ul style="list-style-type: none"> ■ Track and systems installation continues ■ Static testing begins 	<ul style="list-style-type: none"> ■ Track and systems installation underway
2027	<ul style="list-style-type: none"> ■ Certification complete for rolling stock, track and systems ■ Incorporated into Madera to Bakersfield section ■ Driver and crew training continues 	<ul style="list-style-type: none"> ■ Track and systems installation and testing complete for this section ■ Rolling stock running from Madera to Bakersfield ■ Operations and maintenance crews demonstrate proficiency 	<ul style="list-style-type: none"> ■ Track and systems installation continues
2028	<ul style="list-style-type: none"> ■ Incorporated into Merced to Bakersfield section 	<ul style="list-style-type: none"> ■ Incorporated into Merced to Bakersfield section 	<ul style="list-style-type: none"> ■ Track and systems installation and testing complete for this section ■ Rolling stock running from Merced to Bakersfield ■ Operations and maintenance crews demonstrate proficiency ■ Operating Certificate received from FRA. Merced to Bakersfield segment ready for service

Identify and Address Legal, Contractual, Budget and Other Issues

The operations plan will include memorandums of understanding, agreements and contracts that include provisions to ensure maintenance and capital replacement payments.

A legal review of all applicable federal and state laws and regulations to implement the interim Central Valley operations will be completed. Additional legal authority necessary, if any, will be considered and addressed as part of the planning process. All operations planning and implementation documents will comply with all applicable federal and state laws and regulations.

Additional work will be necessary to begin to develop these agreements, including:

- Identifying options for contracting for the interim service operations and maintenance provider which will need to consider how this interim service transitions to the larger, commercially viable Silicon Valley to Central Valley system;
- Potential revenue sharing strategies among the rail providers; and
- Agreements between the state transit agencies, ACE, the San Joaquins and CalSTA.

The Authority is advancing implementation planning for interim service in the Central Valley in close coordination with the Early Train Operator which brings significant experience in putting high-speed rail into service in Germany. It will be conducted in full partnership with our state, regional and federal partners and stakeholders. The Authority's Board of

Directors will be fully informed as this work advances so that it can make key policy and procurement decisions with full information about the options and implications of those decisions.

■ Proposition 1A Compliance

The Authority has secured funding from both state and federal sources which are all currently being used to deliver the Central Valley segment. These sources are described in **Chapter 3, Funding and Affordability**.

In December 2016, the Authority designated the Central Valley as a usable segment and approved a Proposition 1A Central Valley Funding Plan (pursuant to Streets and Highways Codes section 2704.08(d) (final funding plan)). In March 2017 the Department of Finance Director completed his review of the funding plan and approved the expenditure of \$2.5 billion in Proposition 1A funds for construction in the Central Valley and to meet match fund commitments in the Federal Railroad Administration ARRA grant agreement.

The Central Valley Funding Plan included all necessary high-speed rail components to be able to test and run high-speed rail trains over the Central Valley segment. The funding plan stated that high-speed rail trains were not part of completing the Usable Segment but will be part of the Authority's implementation and operation of a non-subsidized Valley to Valley Line.

The 2016 Central Valley funding plan stated that Authority-purchased high-speed trains would utilize this Central Valley Usable Segment as a test track to enable the rolling stock, signaling system, and the electrification system to be tested and commissioned and for all of those systems to be certified.

The 2016 Central Valley funding plan states: "Once the high-speed rail infrastructure is completed and if



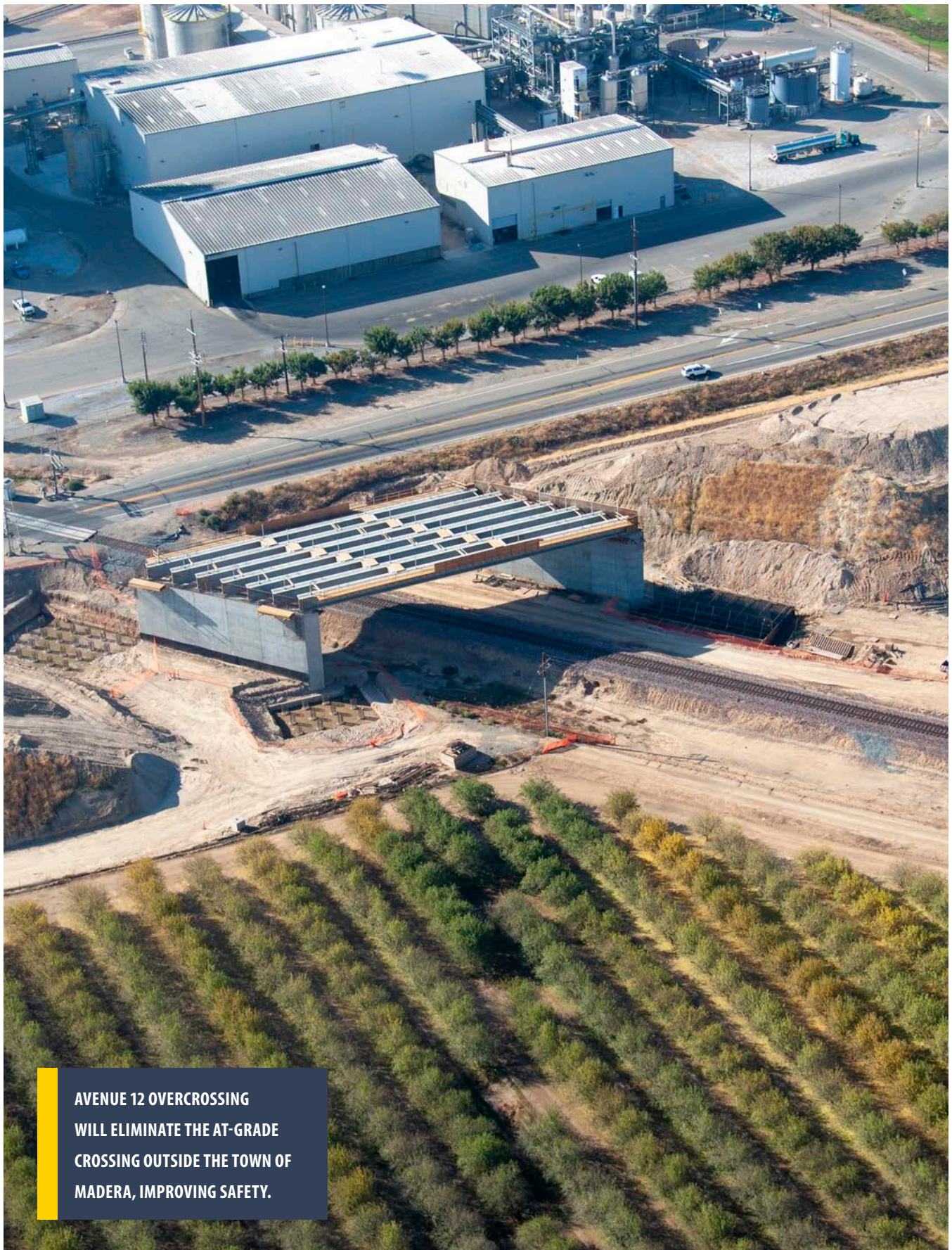
**AVENUE 7 GRADE SEPARATION
PROJECT IMPROVES SAFETY BY
RELOCATING AND STRAIGHTENING A
PORTION OF THE ROAD.**

it is available for an extended period of time beyond testing of high-speed trains, the Authority will explore options for how best to put the infrastructure into service. One such option would be to transfer the San Joaquins service from the existing BNSF line to run on that new infrastructure. The newly built line would allow for faster speeds, decreasing the end to end run time by as much as 45 minutes. Faster service would improve the attractiveness of the service, increasing both ridership and operating revenue. The additional revenue that this could generate would reduce the amount of needed operating subsidy by Caltrans.”

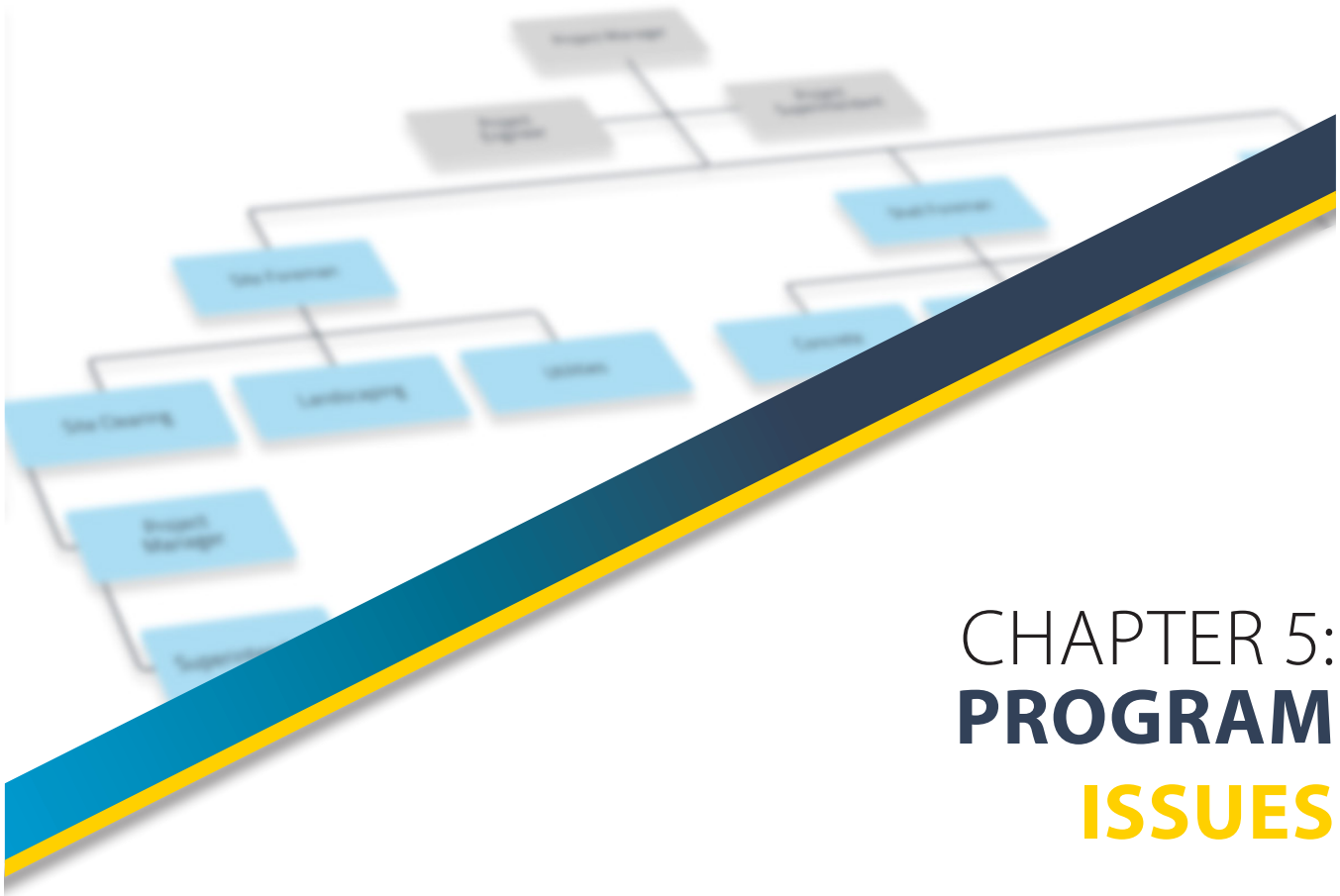
More recently, the ETO study of early interim service concluded that electric high-speed rail service is superior to running diesel San Joaquins trains in the corridor (**see Chapter 1, Early Interim Service Analysis**, for more detail about the ETO study). The Authority has worked with CalSTA and the SJJPA to explore a high-speed rail service option. Specifically, whether a high-speed operator, other than the Authority, could operate on the Central Valley line in partnership with CalSTA and the SJJPA and use—through a lease arrangement—the Authority’s electrified Central Valley infrastructure, including high-speed train sets, once testing is completed.

Access to additional Proposition 1A bond funds, above the \$2.5 billion, for capital purposes will be necessary to complete the Central Valley line from Merced to Bakersfield. Civil infrastructure from Madera to Merced and from Poplar Avenue to Bakersfield will need to be constructed. The Authority will also need to complete the installation of all the systems and electrification on the Central Valley Line as well. These additional capital costs will need to be funded with state funds only—Proposition 1A funds and Cap-and-Trade funds.

The Authority will comply with all statutory requirements in the Proposition 1A bond act to access additional bond proceeds.



**AVENUE 12 OVERCROSSING
WILL ELIMINATE THE AT-GRADE
CROSSING OUTSIDE THE TOWN OF
MADERA, IMPROVING SAFETY.**



CHAPTER 5: PROGRAM ISSUES

Legislative Requirement: This chapter covers statutory requirement (g) Any issues identified during the prior two-year period and actions taken to address those issues.

Our 2018 Business Plan offered a candid assessment of the challenges the high-speed rail program faces. In brief, those challenges relate primarily to managing costs, schedule, securing additional funding and our transition to a fully mature project delivery organization. It is worth noting that projects around the world of similar magnitude and complexity have faced these same challenges, and successfully addressed them.

The 2018 Business Plan outlined our strategy to anticipate and manage the challenges we face, and, specifically, our strategy to apply the lessons learned from our construction contract experience in the Central Valley. Since the release of the 2018 Business Plan, we redoubled our efforts to constantly improve our performance, and we are making progress. We also welcomed the recommendations offered by the California State Auditor in a review of the high-speed rail program, which was released in November 2018.

Federal Disengagement

The most significant schedule risk facing the Authority today is the Federal Railroad Administration's (FRA) withdrawal in completing its responsibilities under the National Environmental Policy Act (NEPA). Since July 2018, the FRA has not acted as required to complete the combined state and federal reviews on environmental deliverables identified in the ARRA agreement. This includes failure to complete necessary document reviews under NEPA and related federal environmental laws and agreements, not participating in coordination meetings with other federal agencies, and refusing to sign draft Environmental Impact Statements (EIS) for public circulation, despite having participated in the development and early reviews of the documents.

The NEPA reviews of two critical project sections EISs have been indefinitely delayed because of the FRA's inaction: the Merced to Fresno Central Valley Wye (CVY) and the Fresno to Bakersfield Locally Generated Alternative (LGA). These two project sections require completion of NEPA to satisfy not only the ARRA grant but also to secure necessary permits from other federal partners to enable construction. Unfortunately, the FRA's confirmed inaction compromises the Authority's ability to advance the project adding risk and jeopardizing the completion of the ARRA commitments before the December 2022 deadline. Further, this inaction will likely jeopardize the ability to advance construction of the Madera to Merced extension as well as the Poplar Street to Bakersfield Station to meet the schedule for service.

Further, the FRA's non-participation in the NEPA process for the Los Angeles County Metropolitan Transportation Authority's (LA Metro) Link US Project will result in the indefinite delay of the NEPA Record of Decision (ROD). As a workaround, LA Metro is also

progressing a CEQA-first strategy, like the Authority, to obtain the Notice of Decision (NOD) to keep the project on schedule. The Link US project is identified as part of the region's overall plans to manage traffic during the 2028 Olympic games. Despite LA Metro's effort to mitigate the risk of delay noted above, the FRA's lack of participation is likely to have a material impact on LA Metro's ability to complete the project in time for the 2028 Olympics.

Up until February 2019, FRA staff continued to communicate with Authority staff. The FRA's Engineering, Planning and Safety staff continued to participate in reviews and meetings with the Authority. However, the FRA's environmental staff would not provide direction, participate in meetings, review documents nor act on critical decisions. These inactions have affected documentation progress in nearly all project sections.

In February 2019, the FRA's limited participation with the Authority transitioned to complete disengagement as communicated through a letter from the FRA Administrator. This now obstructs the Authority's ability to advance the program and meet the mutual intent of the federal grant agreements. (See Authority's response letters in the Appendices.)

The grant agreements are cooperative agreements that requires certain actions by both parties to complete the necessary deliverables. Deliverables include the preparation of environmental impact statements and other related environmental documents. Currently, the FRA is the lead federal agency and responsible for completing NEPA and related federal environmental processes.

Since May 2017, the Authority has sought transfer of NEPA responsibilities to the Authority under the Surface Transportation Project Delivery Program,

known as NEPA Assignment. This program is widely recognized as a common-sense, bipartisan solution to reduce layers of review by assigning responsibility to the states where transportation decisions are made. Without NEPA Assignment or the FRA resuming its federal oversight responsibilities, the Authority cannot complete NEPA environmental reviews.

In addition, it is necessary for the FRA and the Surface Transportation Board (STB) to certify operational technical compliance. If the FRA and the STB cannot complete their certifications, this will delay any operations.

This disengagement by the FRA represents an unprecedented federal government action to cripple the advancement of a project it has helped fund. On March 4, 2019, Authority CEO, Brian Kelly, sent two letters to the FRA seeking re-engagement and the restoration of a functional partnership on this project. Those letters have been unanswered by the FRA after nearly two months.

The 2018 State Audit recommended that the Authority develop a contingency plan if at any time the ARRA grant requirements could not be achieved. It will not be possible for the Authority to develop or finalize a contingency plan without proactive engagement by the FRA.

Supplemental and Phase 1 Environmental Clearances

The grant agreements require the FRA and the Authority to complete the remaining two supplemental and six additional Environmental Impact Statements (EIS) by December 2022. Refusal to act on the two supplemental documents, the CVY and the LGA, are resulting in day-for-day delays until the FRA re-engages. Continued delay will jeopardize

the Authority's ability to complete the other six project sections environmental reviews on schedule. If the FRA has not engaged by May 2019, the Authority will incur additional delays in completing a Merced-Fresno-Bakersfield operating section, as well as incur additional cost increases, delaying the start of operations within the Central Valley.

Currently, the Authority plans to complete joint NEPA/CEQA environmental documents for all project sections. However, to advance the program during FRA absence, when a project section Administrative Draft is complete, the Authority will decide whether to proceed with a CEQA-first strategy for that section. Completion of a CEQA document will allow the Authority to better define the project, and advance construction planning, design and cost estimation. Although the schedule for completing the Final Environmental Impact Report (EIR) pursuant to CEQA will be within the Authority's control, completion of NEPA will be indefinitely delayed until the FRA re-engages as required under NEPA or transfers responsibilities under NEPA Assignment.

It is important to note these schedules and associated costs are significantly at risk. Depending on when FRA re-engages and under what condition – authorizing NEPA Assignment or retaining their federal oversight role – will affect the ultimate document completion dates and costs. The longer FRA is absent, the harder it becomes to meet the December 2022 ARRA grant agreement deadline. In addition, documents that may be completed and sit idle pending federal determination could require additional updating before publication. All projections assume that resources to complete reviews on multiple project sections are available when FRA re-engages and that work currently underway without federal involvement will not be revisited.

Mitigation

A significant mitigation to schedule concerns will be for the Authority to be granted NEPA Assignment. However, until that decision is made, to partially mitigate FRA delay impacts, the Authority will consider implementing a CEQA-first strategy for environmental reviews. Typically, this is an approach used by states due to delays in the federal review processes, not when the federal partner stands down. This strategy enables the Authority to proceed with obtaining state environmental decisions that will allow the Authority to start critical enabling works required prior to procurement of future civil contracts. This early work includes:

- Advancing preliminary design to support execution of third-party agreements;
- Performing preliminary surveys and appraisals to support future right-of-way acquisitions;
- Securing agreements with major utilities;
- Obtaining final permits from state permitting agencies; and
- Support negotiation of terms and mitigation strategies with federal permitting agencies.

Advancing this CEQA-first strategy will result in a sequential, as opposed to concurrent, environmental review processes. The process of splitting the environmental review will add cost and complexity to each affected project section. Additional costs associated with this approach include stakeholder engagement, public circulation requirements, and increased program and project management costs resulting from the extended and duplicate public reviews. However, it will enable the Authority to

make important advances in project planning and development. It is the only viable strategy left to the Authority given the FRA's current non-participatory stance.

Other Affected Environmental Actions and Clearances

To continue to advance existing construction requires the Authority and FRA agree to project changes that have occurred on the previous environmentally approved segments. The Authority conducts a thorough environmental review of any proposed project change either initiated by the Authority of the contractor and obtains concurrence from FRA with respect to NEPA. Without FRA participation, or NEPA Assignment, the Authority lacks standing to assert that previous findings on completed environmental documents remain valid.

Mitigation

Currently the Authority is proceeding on work that the FRA has previously determined required simply documentation. However, all re-examinations requiring FRA review and concurrence are pending an FRA NEPA Assignment determination or re-engagement. A prolonged delay will require the Authority to determine how to address any change that could require significant environmental re-examination.

State Audit and Our Response

On November 15, 2018, the California State Auditor (Auditor) issued a report on the efficiency and efficacy of the policies and practices employed by the Authority (Report 2018-108). The audit was conducted at the request of the Joint Legislative Audit Committee (JLAC). In testimony before the JLAC in January 2018, the Authority welcomed the oversight offered by the audit as part of our commitment to ongoing improvement and transparency. Our staff cooperated fully with the Auditor's office in its review of the program and took the Auditor's recommendations seriously. The Authority has worked closely with the Auditor's office to implement the recommendations and will continue to do so.

The audit's broad objectives were to review contract management and cost containment; approval of contract change orders; efforts to determine the economic impact of the project; small and disadvantaged business contracting; sustainability and our compliance with the policy; and opportunities to expedite the project and reduce costs through cooperation with other entities.

Among the topics the audit report addressed were:

- The Authority's decision to advance Central Valley construction before completing certain planning tasks;
- The effect of the decision to pursue blended options in the Bay Area and Los Angeles;
- Our contract-management policies and procedures and documented adherence to them;

- Our sustainability policy and our measurement of compliance with that policy;
- The Authority's small and disadvantaged business goals and the extent to which it is meeting them; and
- Estimation of the project's economic impact and the extent to which its analysis follows industry standards.

The Authority has made progress on addressing these issues and others outlined below.

Organizational Refinements

Over the last year, the Authority's leadership identified, and the State Audit findings confirmed, that additional organizational work is necessary to fully execute the transition to a delivery organization. The reorganization and governance processes developed over the last year, and described further below, have been established and are in place; staff are executing work within that new structure; and decisions are moving forward. However, specific work is still necessary to ensure that policies and procedures are current, contract and state staff are properly aligned to functions, staff understand their responsibilities in adhering to those policies and procedures, and that training reinforces staff roles and responsibilities.

In addition, recruitment presents another area of challenge. As noted during the Audit review, hiring senior staff with the experience working on large infrastructure projects has been challenging. In addition, recruitment in general on a project that experiences significant public and political controversy is not always easy. Additional work

is required to ensure that the right resources are available at the right time to achieve success.

The Auditors identified several areas where they believe we can improve how we do business. Many of the recommendations were consistent with and built on steps identified by the Authority's new executive leadership in 2018. The Authority is implementing all of the Auditor's recommendations and began reporting to the Auditor, the Legislature and the public in January 2019.

Development of Project Controls, New Governance Structure

As discussed in the 2018 Business Plan, the Authority has built on changes that were made to its governance structure and oversight functions. The Authority formalized the new organizational structure in the Program Management Plan (PMP) in October 2018. The PMP presents a governance structure and processes that stress program management and delivery.

These governance changes established a more formal assessment of the construction, financial, legal and other program perspectives related to all proposed changes to ensure fully informed decision making. Specifically, the Authority restructured and formalized the approvals and reporting conducted through the Program Delivery Committee (PDC) and the Business Oversight Committee (BOC). The Program Management and Oversight Branch manages the discussions and actions of the committees, ensuring internal decision-making rigor, accountability and transparency for major decisions. These committees, along with the Administrative Committee, report directly to the Executive Committee, which is the Authority's senior management governance committee.

These changes enhanced interdepartmental interaction through a more streamlined process for identifying issues, resolving problems and making decisions. This process ensures that issues and proposed changes are fully vetted and that decisions requiring Board of Directors consideration are well defined and clearly articulated.

Administrative Committee

The Administrative Committee provides governance and oversight of the Authority's annual Administrative Budget. Additionally, the Administrative Committee is responsible for overseeing the administration of the Authority including, but not limited to, IT, communications, human resources, procurement and contracting, employee engagement, facilities outside of Program Delivery, and commercial/business oversight.

Program Delivery Committee

The Program Delivery Committee (PDC) provides governance and oversight of the Authority's programmatic execution and performance. It is a management committee that is accountable for all aspects of program delivery and evaluates potential program changes in accordance with the 2018 Program Baseline adopted by the Board of Directors in July 2018, which established the program's scope, schedule and budget. This committee monitors program and project trends and evaluates potential changes, opportunities and risks to the 2018 Program Baseline.

Business Oversight Committee

The Business Oversight Committee (BOC) provides programmatic acquisition strategy, procurement, governance and commercial oversight. This committee acts as the change control committee and reviews change orders above the CEO's delegated

authority prior to them being presented to the Executive Committee and, when appropriate, to the Board of Directors for approval. The BOC also reviews program delivery procurement requests prior to approving procurement actions. The BOC functions under an approved charter that outlines the committee's purpose and decision-making authority.

Documentation and Business Cases

The Authority also strengthened the business case documentation process used by these committees. Under this procedure, business cases are prepared to request a proposed change to the 2018 Program Baseline scope, schedule or cost—this includes design-build contract changes orders above the CEO's delegated authority. Each business case must provide a summary and justification of the recommended actions/changes and must be reviewed and approved by the relevant functional, legal, construction and program teams.

The Auditor had also recommended that additional documentation for actions related to construction change orders include the relevant Project Construction Management (PCM) firm's recommendation and cost estimate with an explanation of the final decision. The Authority amended the BOC's charter to also include this recommendation.

Addressing Program Management Issues

The most significant change since the 2017 Project Update Report has been the Authority's organizational evolution. We previously identified the need for staffing and organizational change to meet the significant oversight responsibilities of a multibillion-dollar program of multiple megaprojects.

New Executive Leadership Team Brings Expertise, Focus on Improvement

An experienced executive management team of highly qualified professionals started in February 2018, charged with transforming the Authority into a robust program-delivery organization:

- The Authority's Board of Directors appointed a new Chief Executive Officer (CEO) with the experience and expertise to provide leadership for the program's delivery and commercialization phase;
- A Chief Operating Officer (COO) was also appointed to oversee the construction and engineering elements of the high-speed rail program to ensure that they are delivered to quality standards, budget and schedule throughout the program's duration;
- A new Chief Deputy Director was appointed to bring a focus on transparency, contract oversight, accountability and performance. This position advises the CEO on programmatic and administrative issues and oversees the Authority's internal and personnel operations; and
- A new Chief Program Officer joined the program in mid-2017, bringing international high-speed rail construction and program management expertise. This position serves as the Deputy Chief Operating Officer. This new, integrated COO function was created to be responsible and accountable for managing all aspects of the Authority's program management and project development and delivery.

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FEBRUARY 12, 2019



GOVERNOR NEWSOM SHARES HIS
VISION FOR CALIFORNIA HIGH-
SPEED RAIL AT THE STATE OF THE
STATE ADDRESS FEBRUARY 12, 2019.

The leadership team completed a comprehensive program management assessment to identify, realign and define staff roles and responsibilities and implemented more integrated and rigorous governance and oversight processes. These changes are now in place.

The work done on this resulted in changes to Authority business processes and organizational structure to define itself as a project delivery organization. These changes were articulated in an updated Program Management Plan, implemented in fall 2018, which established clear roles and responsibilities, created direct and efficient processes and clearly aligned headquarters and field resources. This instilled a proactive project-management approach that emphasized stewardship, organizational agility, collaboration and a collective focus oriented toward achievement, transparency and accountability.

The changes have helped focus the organization on construction progress, which is the single largest area of cost and ongoing risk management.

Creating a New Contract Management Office

As part of organizational changes made last fall, the Authority created a new Contract Management Office within the Office of Program Delivery. This change was made to bolster oversight of the Authority's larger and more complicated contracts, including its construction, PCM and Program Management Rail Delivery Partner contracts. The new Contract Management Office falls under the COO's direct supervision, and contract management remains under the purview of state personnel. This ensures direct oversight by the COO on all aspects of the delivery of the program baseline.

Organizational Evolution to Address Risk Management

One specific area focused on how to minimize risk occurrence and maximize opportunities to offset possible future program budgetary impacts. The change established a risk management team within the new Program Management and Oversight Branch. This Branch is responsible for all aspects of project and program management and oversight. This strengthens the Authority's program oversight with a focus on early trend identification, prudent risk-mitigation identification, accelerated commercial decision making and enhanced contract oversight.

The goal is to reduce individual project costs and mitigate risk, which has included:

- Developing long-range strategies and goals;
- Formulating project scope, budget, schedule and risk registers;
- Narrowing unknowns by methodically and perpetually addressing areas of challenge;
- Executing a deliberate schedule and budget;
- Eliminating risk, and actively managing and mitigating risks that remain;
- Ensuring on-time, on-budget and on-quality/safety accountability; and
- Fulfilling our community and other agency agreements.

This organizational approach, proactive project management and strategic planning will build upon risk management and mitigation strategies. The Authority's objective is to ensure that decision-making concentrates on total cost benefit and transparency.

But, more importantly, this approach defines clear program objectives and goals, and resolves and eliminates program unknowns as project elements are advanced.

The completion of the Monte Carlo evaluations has updated program contingency and risk-mitigation plans. This supports the organizational ethic of aggressive risk minimization initiated in strategic planning and comprehensively carried through construction and rail operations, resulting in a refinement of the program cost-to-complete, summarized in **Chapter 2, Capital Cost Review**.

Improved Reporting Capability

The Authority has made many improvements to the current reporting process for program, delivery and functional reports and dashboards. This work, which was launched in late 2018, will help us as we provide quarterly program updates to the Legislature to enable policymakers and the public to track progress toward meeting the federal grant (ARRA) deadline of December 2022.

January Report to the Auditor

The first 60-day report back to the Auditor noted several areas that the Authority had implemented changes based on the Audit recommendations.

■ Adding Experienced Contract Managers

To bolster its ability to manage the multiple contracts associated with delivering the program, the Authority is creating a formal process for hiring experienced contract managers. This process will include emphasizing contract-management experience/

skills and desirable contract-manager qualifications. In addition, all new advertised positions that include contract management activities will specify the skills required for a contract manager within the duty statement.

All existing contract management duty statements have been reviewed and modified to reflect contract management/oversight responsibilities for all contract managers and their supervisors. Contract-manager supervisors' duty statements will also address their responsibility to hold staff accountable for compliance with the Authority's policies and procedures.

The Authority will ensure that contract-manager supervisors attend contract-management training through a separate program designed specifically for supervisors. This will ensure that they are equipped to manage and guide contract managers in adhering to the Authority's policies and procedures.

■ Monitoring Contract Managers' Compliance

The Authority created a schedule to perform assessments of contract manager compliance and performance, which began in November 2018. The assessments provide documented evidence that state contract managers are properly approving deliverables/invoices, resolving disputes or performance issues effectively, and justifying contract amendments with verifiable documentation in accordance with the Authority's policies and procedures. The Authority anticipates that assessments for all active contracts will be completed by May 2019. The assessments also provide supervisors/management with documentation that demonstrates contract manager accountability (conformance/nonconformance with the Authority's contract compliance procedures).

These assessments follow a formal process requiring and reviewing evidence from contract managers demonstrating their approval of deliverable, detection and resolution of any contractor's performance issues, and assessment of contract amendments. Any corrective actions are tracked by the quality team and reported to executive management.

The Authority has temporarily transferred internal state personnel to augment the Contract Management Branch. In the interim, any assessments performed by contract staff will be reviewed and approved by state staff. The first annual report of completed contract manager assessments will be prepared in November 2019.

Updated Policies and Procedures

The Authority's Administration Office is in the process of evaluating and drafting updated policies and procedures. New procedures have been drafted for evaluating whether new or existing administrative duties should be assigned to contractors or to state employees, based on Government Code 19130.

Specifically, a policy and procedure to provide consistent guidance to contract managers has been drafted. In addition, staff has drafted an enhanced performance-based evaluation dashboard for the PCM firms and is updating the PCM Contract Management Manual to clarify PCM roles and responsibilities. Once these documents are finalized, updates will be incorporated into existing contract performance monitoring and reporting policies and procedures and included as part of the Authority contract managers' monthly invoice approvals.

Quarterly ARRA Status Report to the Legislature

The Authority submitted its first quarterly status report to the Legislature in January 2019 summarizing the status of construction in the Central Valley and all environmental approvals. The report described the progress of the Central Valley construction projects using an earned value model that compares construction progress to the projected total completion cost and date. The report also provides information on project cost and schedule risk and the Authority's response to those risks through mitigation strategies.

With the release of the first quarterly status report, the Authority received valuable feedback from legislative staff and the State Auditor. In turn, using this feedback and working collaboratively with the Peer Review Group, the Authority has developed a refined and improved report template for future use. This new template contains clear and digestible dashboards illustrating the budget (including cost risks), schedule and spending rate for each of the construction packages.

The Authority is committed to producing a quarterly status report that achieves the legislative purpose – to enable policymakers and the public to track our progress and in meeting the federal grant deadline. To that end, the Authority is conferring with legislative staff and the State Auditor on the format of the new report template and its use moving forward. The next quarterly report will be released July 1, 2019 and each quarter thereafter.

Increased Transparency

The Authority is committed to transparency and accountability. We understand the importance of keeping the public informed about the work we are doing to deliver high-speed rail and how we are conducting this work on behalf of the citizens of California.

Recently, Governor Gavin Newsom directed us to take steps to provide an even greater degree of transparency for the citizens of California. Our Board of Directors fully supports his request and we are taking the first steps to fulfill that commitment by creating a Transparency and Accountability webpage. Our goal is to provide the public with easy access to key documents including those that are most current.

The Transparency and Accountability webpage includes change orders executed to date for the Authority's three Central Valley design-build construction contracts:

- Construction Package 1;
- Construction Package 2-3; and
- Construction Package 4.

What Is a Change Order?

Change orders are common to most projects and very common on larger projects. A change order is a revision to a current contract that modifies the scope of work to or from the contract and may alter the original contract amount and/or completion date.

Future Funding

The challenges of funding a transportation system of this complexity and magnitude are not new to this program or to other large-scale transportation infrastructure programs across the country and around the world. One of the biggest challenges we face is securing full funding for delivering the system. That is why we are taking a “building block” approach to funding and delivering the program.

Since the inception of planning for the program, it has been assumed that the system would be funded with federal, state and local funds—and with private investment. This was the underlying assumption when the Legislature and the voters approved \$9 billion in state bond funds with the passage of Proposition 1A in 2008, which was approximately 20 percent of the estimated system cost at that time. It is worth noting that there were no other established funding sources for the program in place at the time.

Over the last 11 years, the Authority secured approximately one-third of the funds needed to complete the current estimated cost of the system:

- In 2009, one year after the passage of Proposition 1A, the Authority received \$2.5 billion in funds made available through the American Recovery and Reinvestment Act of 2009 (ARRA);
- One year later, in 2010, \$929 million in additional federal funding was authorized through a Fiscal Year (FY10) Transportation, Housing and Urban Development grant;
- In 2014, the Legislature appropriated 25 percent of the annual proceeds from the Cap-and-Trade Program to support the

development and construction of the system, providing an ongoing revenue stream; and

- In 2017, the Legislature extended the Cap-and-Trade Program through 2030.

The Authority is currently operating on a pay-as-you-go funding approach, which means that contracts are let as funding is available. However, the continuation of this approach indefinitely will not support our delivery schedule.

In its March 30, 2018, letter to the Legislature on the Draft 2018 Business Plan, the California High-Speed Rail Peer Review Group (PRG) discussed this issue and made the following points on funding for the program:

- The Draft 2018 Business Plan highlights the fact that there is a continuing and growing funding gap that must be addressed to complete service between San Francisco and Bakersfield and, eventually, to Los Angeles and Anaheim in Phase 1 of the system;
- The Authority can no longer be expected to deliver a project for which the proposed scope is not matched by adequate and reliable funding; and
- It will be essential to develop a realistic program of project finance by revenue source and agency (local, state, federal, private) and a realistic discussion of the predictability of funds generation.

The PRG laid out, in broad terms the options before the legislature. They recognized that the best likely option given the current financial constraints was

to “[c]omplete the existing committed work in the Central Valley and provide connections to the existing San Joaquin service so that use could be made of the investment and the ARRA funding would not need to be repaid.” This is the path the Authority is pursuing with the Merced-Fresno-Bakersfield line.

The PRG concluded its letter stating that it “...believes that rail passenger service, including high-speed rail service, is important to the economic growth of the State and can play a central role in the State’s future transport network...unfortunately, the high-speed rail program as it is currently defined and financed will not be able to support the role that high-speed rail could have in the state’s future transportation system.”

At a Legislative hearing on March 26, 2019, on the status of high-speed rail, the PRG reiterated its comments that the funding needed for delivering the system is not in hand. The PRG is correct in noting that this handicaps our ability to deliver the full Phase 1 system and our ability to project when it might be completed. At the same time, the Authority acknowledges that policymakers require more confidence in the Authority’s ability to deliver the project before considering additional funding for it. Toward that end, Authority management recommends the building block approach laid out in this 2019 Project Update Report.



**GOLDEN STATE BOULEVARD IS
BEING REALIGNED TO THE WEST TO
MAKE ROOM FOR HIGH-SPEED RAIL.**

FRESNO

CHAPTER 6: PROGRAM RISK

Legislative Requirement: This chapter covers statutory requirement (h) A thorough discussion of risks to the project and steps taken to mitigate those risks.

In discussing the risks present on the California high-speed rail program, it is important to note that potentially significant risks are common to all mega-projects of similar magnitude and complexity. It is the successful management of these risks that defines the success of these programs. For the high-speed rail program, the current significant risks include:

- Our relationship with the Federal Railroad Administration (FRA);
- Funding;

- Cost increases;
- Schedule delays; and
- Other construction and program risks.

The Authority is mindful of the importance of aligning service implementation plans with funding and schedule risk. Authority staff is developing future rail procurements (track and systems, and trainsets) to ensure maximum flexibility to respond to funding risk and schedule variability. The Authority is achieving this through multiple identified geographic segments/phases—each having an independent Notice to Proceed—as well as establishing escalation indices to minimize costs due to funding and schedule changes. This will allow the program to advance, yet manage associated variability risks.

Federal Disengagement

The FRA's lack of engagement is a major risk to the Authority in several crucial areas:

- NEPA Assignment and/or FRA's action in completing environmental documents;
- Funding to complete the First Construction Segment;
- Development of an operational Contingency Plan; and
- Ultimate certification of completed work and rail operations.

The FRA's disengagement also affects the Los Angeles County Metropolitan Transportation Authority's (Metro) Link US Project because the Authority was set to assume the role of "lead agency" under the Authority's application for NEPA Assignment. The request for NEPA Assignment has not been approved by the FRA, and the FRA has not fulfilled its obligations as lead NEPA agency on the Link US Project.

The FRA's disengagement presents a serious schedule risk and cost implications for the Authority pending FRA's action as required by the ARRA agreement. Although the lack of engagement since February 2019 affects many aspects of the program, the pending NEPA Assignment request since July 2018 has already contributed to additional costs and delays.

The Authority is still waiting for a final decision on its request for NEPA Assignment from the FRA and the U.S. Department of Transportation. Without an approved NEPA Assignment or the FRA resuming its federal oversight responsibilities, the Authority cannot complete NEPA environmental reviews. This affects the Authority's ability to define the scope and estimate for future projects. It will also affect the

Authority's ability to achieve the Merced-Fresno-Bakersfield line. For a full discussion, see **Chapter 5, Program Issues**.

Current Funding

The availability of sufficient funding presents the biggest challenge to the Authority and the greatest risk to delivering both the Silicon Valley to Central Valley Line (Valley to Valley) and Phase 1. This challenge extends further than the present threat from the FRA, although the FRA's current position compounds the problem.

In our 2016 Business Plan, we assumed that Cap-and-Trade would not sunset until 2050, enabling the Valley to Valley Line to be fully funded. However, the passage of AB 398 established 2030 as the sunset date. Although the 2030 date provided more certainty to our funding future, the 2030 date necessarily reduced the duration and quantity of our funding projections. Also, Cap-and-Trade auctions continue to bear the risk of volatility and the certainty of future receipts is not guaranteed.

In our 2018 Business Plan, we proposed using the available funding toward investments in both the Central Valley and the San Francisco Peninsula. For early service, however, based on the Early Train Operator's analysis, we are recommending that the Authority's resources be focused on a longer segment in the Central Valley, the Merced-Fresno-Bakersfield line. This line is within our current funding capacity, and focusing our resources on this line will allow us to deliver usable assets and demonstrate the benefits of high-speed rail to Californians as early as possible.

The composition of the identified funding for this section still contains inherent challenges that include volatility, the possibility of rescission of federal funds and approval risk. By successfully accessing these

sources, we believe that it is possible to deliver infrastructure capable of delivering high-speed rail operations in the Central Valley. This section further details the key risks to the available funding.

Proposition 1A

Proposition 1A was passed by voters in 2008, creating a \$9 billion dedicated source of funding for California high-speed rail. The California Legislature appropriated Proposition 1A bond proceeds in the amounts of \$2.609 billion for Central Valley construction and \$574.8 million for program-wide project development costs.

Access to remaining Proposition 1A funds could be delayed for various reasons. The Authority will have to work closely with the Legislature, Governor and Department of Finance to assure timely appropriation of Proposition 1A funds to keep the project on schedule.

Mitigation

The Authority works in close coordination with the State Attorney General's Office, the Department of Finance (DOF) and the State Treasurer's Office to facilitate Proposition 1A bond sales on a timely basis to meet project cash flow needs.

Staff have developed detailed timelines that describe the critical path requirements necessary to secure approval for accessing the remaining Proposition 1A funds. This mapping process has identified the need to engage stakeholders early in the process and potentially pursue a two-stage approach for future bond requests. The Authority envisions funding plans for an initial request of the remaining Proposition 1A funds to be submitted as early as FY2020-21.

To avoid delays in the budget request process, the Authority will proactively discuss and work with the DOF and legislative committees on a Proposition 1A strategy to ensure that required documents are prepared and transmitted in accordance with statute and stakeholder expectations. The Authority will submit on a timely basis each required Proposition 1A funding plan (S&H section 2704.08) to the Legislature and the DOF for approval of future appropriations of state Proposition 1A bond funds.

Cap-and-Trade

The primary risk to Cap-and-Trade funding is that receipts will be lower than forecast. Because Cap-and-Trade is an auction-based revenue source that is contingent upon market factors, it is not possible with certainty to predict the results of future auctions. This makes planning for projects that include Cap-and-Trade as a revenue source challenging because of the uncertainty of future receipts.

With the Legislature's extension of the Cap-and-Trade Program through 2030, quarterly auctions have been strong—an indication that the market has reacted positively to the legislation. The Authority has forecast potential future receipts from the Cap-and-Trade auctions. If these differ significantly from the Authority's forecasts, the Authority may not be able to meet program requirements and will need to adjust program expectations accordingly.

Mitigation

The Authority continues to monitor Cap-and-Trade auction results and actively manages commitments of Cap-and-Trade funds. For planning purposes as documented in the 2018 Business Plan, the Authority has assumed average annual receipts of \$750 million in the fiscal years moving forward. This assumption is

supported by California's Legislative Analyst's Office (LAO), which published the *Cap-and-Trade Extension: Issues for Legislative Oversight* report in December 2017. The report notes a low and a high revenue scenario, which results in the Authority's share of expected revenues ranging from \$500 million to \$1 billion in 2018 and from \$500 million to \$1.7 billion by 2030. On a cumulative basis, this range would generate from \$7.1 billion to \$18.4 billion through 2030. The four most recent quarterly auctions have resulted in annual proceeds totaling \$767 million.

Through periodic sources and uses modeling and cash management analysis, the Authority has strong controls in place to identify the magnitude of currently available funding relative to funds already committed. As part of the funding allocation process, the Authority takes into account current program obligations and anticipated sources and uses. Funds are then allocated to ensure that current commitments are met and that priority projects can be funded.

If Cap-and-Trade funds were to become unavailable or were to fall significantly below projections, the Authority could use Proposition 1A to fill any short-term gaps in required revenues. This would be limited to the amount of Proposition 1A funds that were unexpended, or otherwise not committed to other program needs.

FY10 Federal Funding

Currently, the Authority is fulfilling the obligation to match ARRA expenditures that were completed in September 2017. Federal reimbursement of program expenditures was completed under a tapered match approach where all ARRA federal funds were

expended first. The Authority met this spending deadline. The grants require the Authority to fulfill the ARRA match obligations and increased costs to complete the federal grant scope of work prior to requesting FY10 reimbursements. In the February 19, 2019, letter to CEO, Brian Kelly, the FRA indicated their intent to de-obligate the full \$929 million provided in the FY10 grant agreement.

Mitigation

The Authority has undertaken a comprehensive re-evaluation of the costs and schedule to complete the federal grants scope as part of the recently approved baseline cost estimate. Additionally, the Authority is actively managing construction contracts to ensure that forecasted monthly expenditures increase to the level required for timely completion. Although there is currently sufficient time to accommodate slower than forecasted expenditures, this will affect the timing of when the Authority may access FY10 federal funds. There is, however, a limit to this, and the Authority is actively working to accelerate construction spend.

The identification of further state-match funds may be necessary to access FY10 funding. The Authority has anticipated this possibility by selling more than \$2.6 billion in Proposition 1A bonds to date. In addition, the state can also use Cap-and-Trade funding as available should Proposition 1A funds become unavailable for any reason.

In letters to FRA on March 4, 2019, the Authority responded to FRA's February letter. In addition, the CEO offered to work collaboratively to restore a normal working relationship so that the state and its federal partner can deliver this important project. The Authority remains ready and available to engage with the FRA at the earliest possible time.

American Recovery and Reinvestment Act (ARRA)

The FRA has continued, until recently, to review Authority match invoices for ARRA eligibility. Prior to its February 2019 letter, the FRA had excluded some specific items as not meeting match requirements. The Authority has been working with the FRA to answer the agency's questions and respond to its rejections. This review process is ongoing and anticipated to last through the end of the state match period.

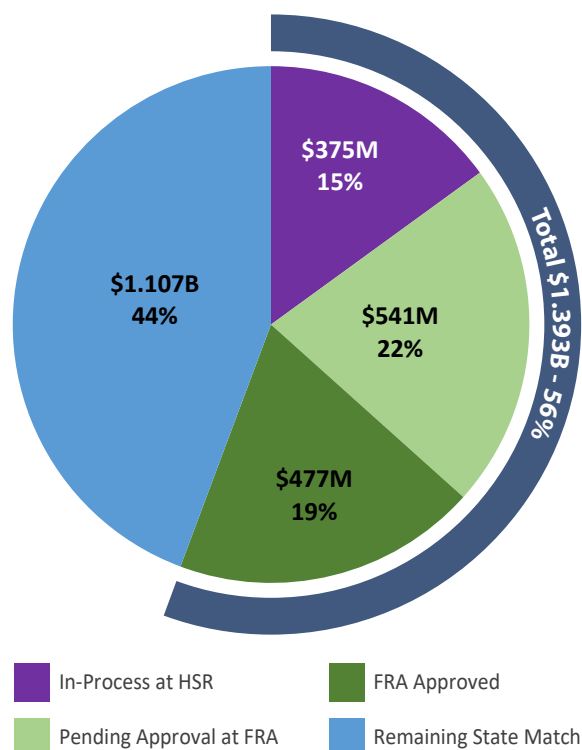
In September 2017, the Authority successfully completed the tapered match approach to the ARRA Grant agreement. Since then, the Authority has been well on its way in matching the \$2.5 billion in federal funding. As of April 2019, only a third of the period for achieving this match has expired, and the Authority has more than half of match-eligible expenditures either approved by FRA, pending FRA approval, or in-process to be submitted to FRA.

As shown in **Exhibit 6.0**, the Authority has 19 percent, or \$477 million, of FRA-approved state match expenditures, \$541 million is pending FRA approval, and \$375 million in eligible expenditures is in-process at the Authority to be submitted to the FRA—totaling \$1.393 billion in match to-date, with only 44 percent remaining to be matched by December 31, 2022.

A protracted process to resolve differences between the Authority and FRA could impact the Authority's ability to meet the grant's match requirements in a timely manner. On a related front, although Proposition 1A bond proceeds have already been received by the Authority, if additional state funds are required to meet federal requirements, there is a risk that sufficient additional Proposition 1A proceeds

may not be available for this purpose. Additionally, the FRA also indicated in its February 2019 letter that it was exploring remedies to reclaim previous ARRA reimbursements and terminate the ARRA agreement.

EXHIBIT 6.0: ARRA STATE-MATCH STATUS UPDATE



Mitigation

The Authority has worked collaboratively with the FRA to facilitate the ARRA state-match review by holding monthly meetings and submitting additional documentation to validate the state match. In addition, to mitigate the possibility of extended negotiations with FRA, the Authority has currently prioritized the submission of state-match invoices that the FRA has previously flagged as lower risk. It is important that the monthly meetings are re-established to ensure that the state-match process is successful.

If future Proposition 1A funding is delayed as additional contributory state matching funds for the ARRA funding, the Authority will utilize appropriated Cap-and-Trade funds in its place.

Cost and Schedule Risks

Although faced with clear risks, the Authority is actively working to identify mitigation strategies related to cost increases and schedule delays. This section outlines current strategies to known and unknown risks associated with cost and schedule.

Cost

Chapter 2, Capital Cost Review, discusses the proposed increase in the Central Valley Segment. Although cost increases are not unusual for programs of this complexity and size, it is imperative that cost increases are fully understood and mitigated to the fullest extent possible. Given the funding risks noted above within an already funding constrained environment, further cost increases threaten the program.

We identified three drivers associated with the increase in costs:

- Scope changes;
- Higher net cost estimates; and
- Higher contingency level assigned to risks.

Over the last two years, the Authority has reported on several common risk themes, such as right of way, third-party agreements and scope changes affecting all three Construction Packages. Effectively managing the risk in these key areas will enable the Authority to successfully control future cost increases.

Mitigation

We have discussed the significant program and management issues we face in delivering this program in **Chapter 5, Program Issues**. Within this chapter, we discussed governance and reporting improvements along with the Authority's organizational evolution to ensure fully informed decision making. These positive changes have improved our identification, assessment and proposed mitigation of the risks that face the program.

Scope changes, which were \$362 million, were affected by change conditions that existed prior to the finalization of the 2018 Program Baseline but had not been identified and assessed to be accounted for in the baseline budget. The improved project delivery and governance structure that is now in place, along with the reporting improvements, has allowed management to identify and assess scope change impacts in a more timely and accurate manner. The key to minimizing the

cost impact of scope changes is extremely proactive communication between the relevant stakeholders. Communication of potential change issues need to begin as soon as they are identified. The Authority has made solid progress in this area. Coordination between the design build contractors, the contract program managers and the Authority has improved through continuous engagement of the relevant parties to resolve issues.

Cost estimate increases totaled \$477 million. These estimate increases resulted from changes in project execution, such as the procurement approach for the Northern Extension, underestimating costs to complete work scope and delay costs. Accurately estimating the costs to complete for required work scope is one of the key competencies required to develop a sound program budget. The establishment of the 2018 Program Baseline and the improved project reporting and governance structure has allowed the development of more accurate estimated costs at completion. The program can now track performance against these estimates more efficiently and, importantly, take corrective actions as required.

The cost update includes a recommended additional \$990 million in contingency over the 2018 Business Plan amount—this is the result of a comprehensive risk-analysis exercise, directed by the CEO, including a detailed Monte Carlo risk analysis completed for the Central Valley Segment. This is the result of the Authority staff recommending a 70 percent confidence level budget. Increasing the confidence level of a project budget increases the contingency and the total program budget. However, it is one of the most effective management tools used on programs.

The Authority has now detailed the potential remaining risk exposure and estimated the costs of addressing these issues. Staff are currently negotiating with each construction contractor to resolve these risks and has made significant progress over the last year in defining and evaluating the contractor claims. Negotiations with the contractors are expected to be completed by summer 2019.

Schedule

The existing design-build contractors' production has been impacted for numerous years due to delays in completing pre-construction activities. These setbacks are primarily from emerging third-party requirements and associated scope increases, lack of environmental clearances for changed conditions and associated right of way delays. These issues were detailed in Chapter 4 of our 2018 Business Plan and confirmed by the State Auditor in her November 2019 Audit Report.

Mitigation

To manage delay risk on the high-speed rail project, the team implemented a robust risk management process and controls to properly assess, control and monitor risks once identified. Specific to delay risk, critical paths for activities have been clearly identified and included in performance reporting. Progress along these critical paths receive the highest priority in meetings as it is clear to all that meeting critical path milestones is how successful execution is managed and judged.

The Authority is implementing a coordinated and deliberate effort with the design-build contractors. Each contract alignment is divided into a mile-per-mile of guideway and individual structures and specific site issues have been

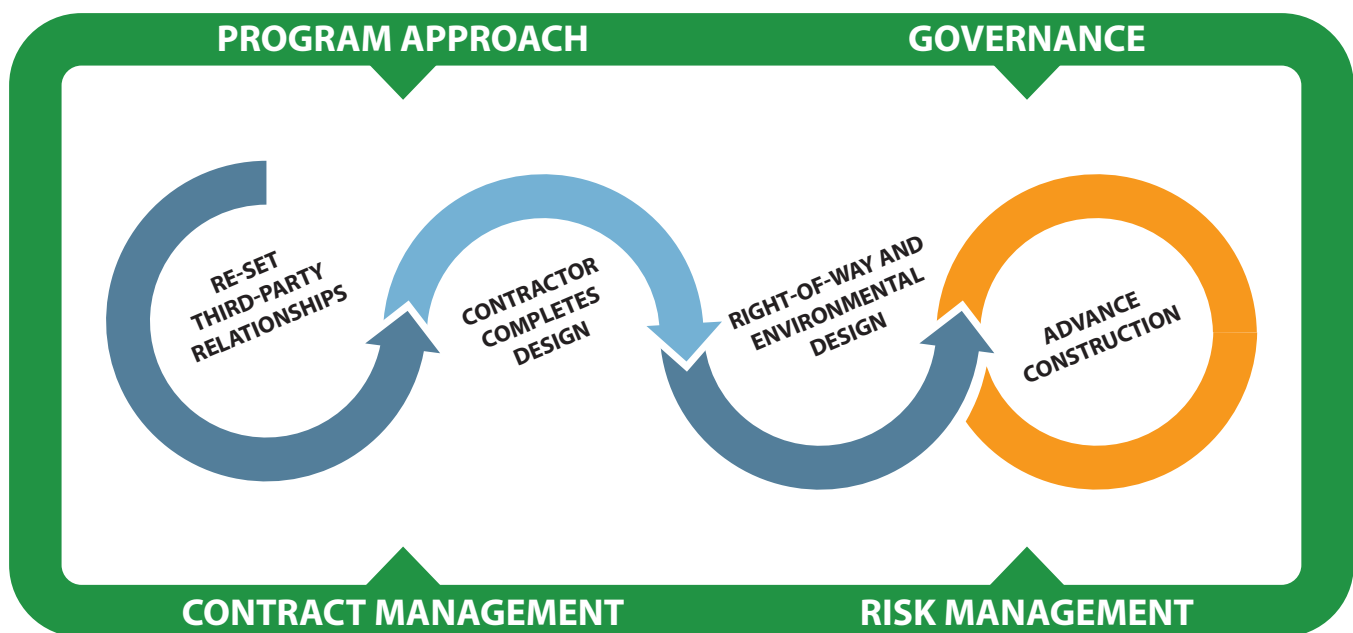
identified and action plans are being actively managed for resolution. Associated resolutions accounted within the contractor provided project schedule are enabling a coordinated state and contractor “ball-in-court” action response.

The focus of this conscious and collaborative effort is for the contractor to complete all remaining design. In doing so, all latent third-party requirements and issues can be addressed, and design reviews and other collaboration can be completed. This allows for either adherence to existing master agreements or the identification of additional construction scope. The completion of designs also ensures final determination of required project footprints and then resolution of necessary right-of-way transactions and environmental clearances. With designs complete, the third-party requirements fulfilled, right-of-way procured and environmental approvals fully satisfied, contractor construction can fully engage, as shown in **Exhibit 6.1**.

The Authority has strategically modified its overall approach to emphasize a holistic program approach focused on a location rather than on individual program areas. Accordingly, program teams work collaboratively to address all issues facing a particular area. Contract management, rigorous governance oversight, and vigorous risk management enhance the delivery of this work. This has allowed project priorities and issues to be aggregated at the program level and communicated to Third-Parties ensuring continuity and final resolution.

The Authority has put a renewed emphasis on contract management to better align contractor and consultant efforts to State objectives and eliminate redundant efforts. The updated Authority governance process and procedures have ensured a commitment to organizational oversight and delivery. In doing so structured configuration and change management processes have reinforced plan execution.

EXHIBIT 6.1: HOLISTIC PROGRAM APPROACH



Finally, a holistic risk management approach is also being applied as a result of the updated Monte Carlo risk-analysis work conducted since the 2018 Business Plan. This has led to a greater understanding and more complete identification of outstanding risks, and the development of action plans for mitigation as further discussed below.

Other Construction Risks

To manage risk on the high-speed rail project, the team put in place a robust risk-management process and mechanisms to properly assess, control and monitor risks once identified. This section will focus on several key themes, the risks that remain and mitigation efforts to manage these following areas of concern:

- Right-of-way acquisition;
- Third-party agreements;
- Stakeholder requirements;
- Scope changes;
- Regulatory compliance; and
- Specialized technical design.

Right-of-Way Acquisition

In 2018, the Authority received a significant legislative approval through SB 1172 that provided high-speed rail with expanded right-of-way acquisition approvals. This simplifies the right-of-way acquisition process for the Authority and will improve the acquisition schedule for the remaining parcels necessary for completion of the Central Valley construction. As shown in **Table 6.0**, the Authority has acquired approximately 82 percent of the parcels required to complete construction in the Central Valley.

TABLE 6.0: RIGHT-OF-WAY ACQUISITION STATUS (AS OF 3/31/19)

Section	Number of Parcels	Parcels Acquired	Remaining Parcels
CP 1	877	816	61
CP 2-3	749	521	228
CP 4	190	164	26
Total	1,816	1,501	315

The extension of construction north to Madera in the CP 1 alignment has increased the amount of right-of-way acquisition. Risks in CP 2-3 and CP 4 relate to obtaining critical parcels, as promised. These are primarily related to structures that require advance geotechnical investigations to complete the designs for CP 2-3 and to complete mainline grading for CP 4.

Mitigation

In addition to leveraging the procedural benefits of SB 1172, Authority staff continue to work with the contractors to progress design, re-sequence work activities and prioritize parcel acquisitions. In addition, staff also are working with property owners to obtain early access to conduct critical geotechnical evaluations.

Monthly reports continue to show right-of-way acquisition progress and the remaining challenges that need to be addressed in a timely manner to

lessen this risk's effect on overall project delivery. Progress issues raised by these reports receive high priority by management and are addressed with an integrated project team response.

Third-Party Agreements

Execution of third-party agreements continue to be an area of risk in construction. Many of the master agreements are now in place with BNSF, Union Pacific Railroad, AT&T, PG&E and various irrigation districts. However, many require multiple agreements related to right-of-way purchases, ultimate construction and ongoing maintenance. All require ongoing management and coordination with the design-build contractors to complete design review approvals and schedule coordination for utility relocation outages or high-speed rail construction.



PHOTO: THE ROAD 27 OVERCROSSING WILL BE OVER 700 FEET LONG WITH THE LONGEST SPAN STRETCHING 198 FEET.

Mitigation

The Authority has hired specialized expertise to assist with complicated utility agreements and relocation coordination. The Authority also instituted “get-to-work” schedule reviews. These reviews ensure that agreements are in place and that the various stages of review, approval and, ultimately, construction are complete without any significant effect to construction activities. Regular coordination, engagement and a single point of contact with the third parties has been implemented resulting in better outcomes and ensuring program wide consistency. Executive level meetings are being held to build more effective working relationships, and to ensure that issues are captured, highlighted, addressed and concluded at the earliest opportunity.

Stakeholder Requirements

The Authority also works with other government agencies to address specific local standards and issues. This risk has primarily been related to local and state roadway standards for grade separations and realignments. Some standards have changed since the release of the Construction Packages. In addition, added reviews and coordination have affected construction schedules.

Mitigation

The Authority is working with local cities and Caltrans to better understand standard changes and review the specific impacts to city- or state-owned roadways. Staff are working to identify critical areas of concern and general approaches to incorporate updated standards. In addition, staff are proposing variances on a case-by-case basis. Executive and technical level meetings are being held to build more effective working relationships.

Scope Changes

A number of activities led to scope changes to the existing contracts. These included decisions such as extending construction north to Madera, in November 2015, for better connectivity with existing rail services, changes in design requirements to expedite construction, and resolution of litigation resulting in settlements with local communities, such as Wasco. These, and other changes, altered the scope of the original design-build contracts.

These additions require significant work to define the scope, provide sufficient engineering to define the project footprint to allow completion of environmental examinations, to develop and submit permitting amendments as necessary, to identify the right of way required and to continue coordination with local stakeholders, utilities and railroads.

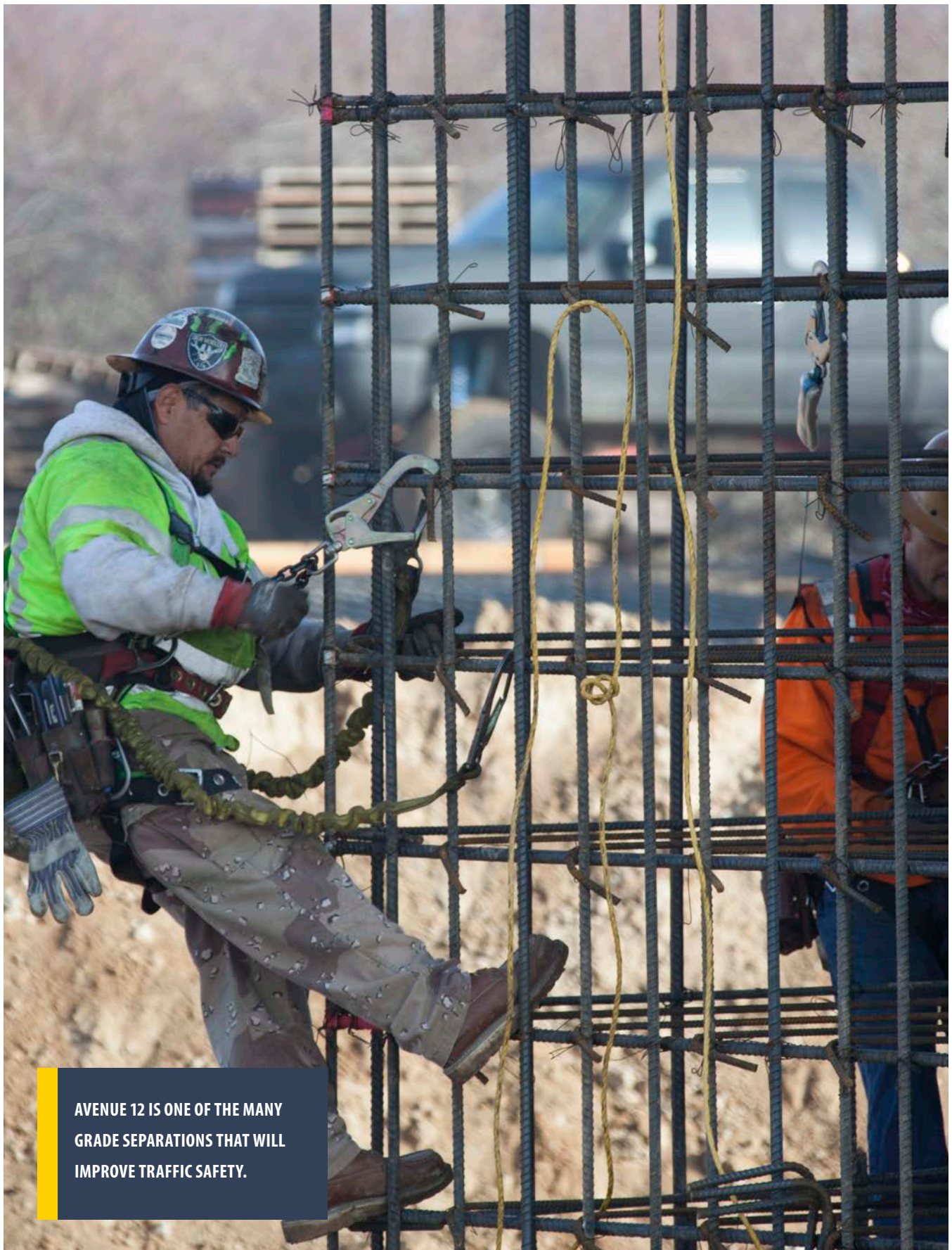
Although the changes may benefit the Authority and stakeholders in the long term, if not managed, the changes could result in time and cost increases.

Mitigation

The Authority is working collaboratively with stakeholders—including communities, utilities, railroads, permitting agencies—and the contract teams to fully define these scope changes and the requirements to complete them.

These changes will result in increased costs to complete the Central Valley construction. Some elements, such as design, have already been included in existing contracts, but others related to construction are still yet to be determined.

Coordination with stakeholders is critical where design reviews affect construction of the high-speed rail line. The get-to-work reviews are monitoring the possible effects on construction. In addition, the Authority is evaluating alternative construction strategies to ensure timely and cost-effective delivery.



AVENUE 12 IS ONE OF THE MANY
GRADE SEPARATIONS THAT WILL
IMPROVE TRAFFIC SAFETY.

Regulatory Compliance

As the permits have been acquired for construction, additional mitigation requirements have been identified. Amendments are taking longer because the designs have not been finalized or the quantity of mitigation is larger than what has already been purchased or is difficult to find. The development of mitigation measures and the implementation for construction have resulted in delays and, in some cases, increased costs beyond what had been originally anticipated.

Mitigation

The Authority and Project Construction Managers continue to work with the design-build contractors to ensure that environmental permitting requirements are clear and implementable. In addition, they coordinate with regulators to ensure that mitigation is reasonable and ensure the contractors track any deliverables to demonstrate compliance.

Continued Organizational Development

As the organization evolves and strives to deliver the Merced-Fresno-Bakersfield line, additional organizational capacity and capability will need to be added. This will include:

- Further contract/commercial skills building on work already done in response to the State Audit but looking specifically to manage multiple procurements and delivery of the new construction packages, track, systems and rolling stock procurements;

- Enhanced right-of-way and third-party teams to prepare to advance the activities for the above procurements so the Authority does not repeat the problems of the past in getting ready for construction;
- Further roll-out of the Program Management Plan to lower levels of organization to provide greater clarity of roles and responsibilities;
- Utilizing the maturing Program Controls reporting documents to provide common data for transparency/accountability of progress to the Board, the Legislature and to the public; and
- Continued review of state and contractor resources to ensure the appropriate mix and use of capabilities.

Mitigation

The Authority is outlining what will be required and how the organization will evolve to move the extensions to Bakersfield and Merced forward. Future revisions to the Program Management Plan will describe how this new staffing will integrate with the rest of the organization and define applicable roles and responsibilities. This will occur over the next several months as the Authority awaits FRA re-engagement and the ability to complete the environmental clearances.

Specialized Technical Design and Design Changes

As construction has progressed, several technical design issues have been identified. Some were the result of contractor changes and/or proposed designs; others were due to stakeholder or regulatory requirements. Some examples include retaining-wall redesign for embankments and the implementation of intrusion-protection barriers required for passenger/freight collision safety.

Design Changes

These design changes required additional work by the Authority and contractors to refine designs to address technical implementation issues. Changes, if not resolved through a formalized change management process, can become the major source of contract disputes, which presents a severe risk contributing to additional project costs.

Mitigation

The Authority has worked with the Project Construction Managers to clearly define specific design requirements. In addition, this has involved further coordination with stakeholders, such as the railroads and other regulatory agencies, to ensure the new designs also address their requirements. Changes are being logged, analyzed, estimated and processed in a timely manner to minimize impacts to the schedule.

Managing Future Tunneling Challenges

Although the tunneling aspects of the program are among the most challenging elements of the system, they are buildable. There are still many unknowns associated with the engineering and environmental challenges with tunnels through specific mountainous terrains.

Mitigation

To address these unique seismic and other underground conditions, we intend to take early and ongoing actions to ensure that they are delivered successfully. We are creating a blue-ribbon Tunnel Delivery Advisory Panel (TDAP) to help us identify the areas of greatest risk.

This panel will advise on a range of issues and questions, with specific early focus on the Pacheco Pass tunnels and outreach to industry tunneling experts. Our target audience will include tunneling contractors, tunnel-boring-machine manufacturers, tunneling engineering firms, geotechnical engineering firms and firms specializing in tunnel construction and risk management.

In seeking this feedback, we will focus on three primary areas:

- Technical specifications and cost;
- Delivery models, contract packaging and risk transfer; and
- Procurement and funding strategies.

Litigation

A program of this nature will experience many different legal risks. These include potential litigation and adjudicatory administrative processes related to project funding, environmental clearances, property acquisition and contract disputes. Previous litigation already affected the Central Valley Segment construction costs and schedules.

CEQA Legal Challenges

County Of Kings v. California High-Speed Rail Authority - Sacramento Superior Court, Filed June 5, 2014.

On May 7, 2014, the Board certified that the Final EIR/EIS for the Fresno to Bakersfield project section had been completed in compliance with CEQA. Afterward, five parties filed lawsuits under CEQA alleging that, among other claims, that the Authority certified a legally inadequate EIR, failed to recirculate the revised draft EIR properly, and made inadequate CEQA findings. A few of the lawsuits also included minor, non-CEQA claims.

Mitigation

Since the 2017 Project Update Report, four of the five parties settled; only Kings County remains. In addition, the Authority did not receive any new challenges on the recently published Supplemental Fresno to Bakersfield Environmental Impact Report.

Proposition 1A Legal Challenges

John Tos, Town Of Atherton, County Of Kings, et al. v. California High-Speed Rail Authority - Sacramento Superior Court, Filed December, 13, 2016

The lawsuit is related to two Proposition 1A bond funding plan actions approved by the Board of Directors for the San Francisco to San José Corridor electrification project and the Central Valley construction segment. These funding plans would allow Proposition 1A bonds to be sold after Department of Finance review and approval. The lawsuit alleged that the Legislature violated the California Constitution when it passed AB 1889 (2016) because AB 1889 materially modified Proposition 1A without voter approval.

AB 1889 legislation states that a corridor or usable segment is “suitable and ready for high-speed trains to operate immediately of after additional planned investments are made on the usable segment and passenger train service providers will benefit from the project in the near-term.” Plaintiffs asked the court to declare AB 1889 unconstitutional and, therefore, the two funding plans adopted by the Board of Directors in December 2016, which relied upon AB 1889. Plaintiffs also alleged that the two funding plans approved by the Authority, and the associated independent consultant reports, failed to meet a number of the requirements of Proposition 1A.

Mitigation

Recently, the Superior Court ruled in the Authority's favor, finding that AB 1889 was constitutional. All parties stipulated to enter a final judgment in the Authority's favor. The case may be appealed by Tos, et al.



THE SAN JOAQUIN RIVER VIADUCT
PARALLELS THE SAN JOAQUIN
RIVER AND REQUIRES SPECIALIZED
CONSTRUCTION EQUIPMENT.

Future Litigation

It is likely that similar litigation on other project sections or new litigation may arise in the future. As the program advances, the Authority will work closely with affected stakeholders to address issues before they become formal lawsuits. In addition, the agency will continue its practice of using alternative dispute resolution processes, such as mediation or arbitration, where possible.

Stakeholder Support

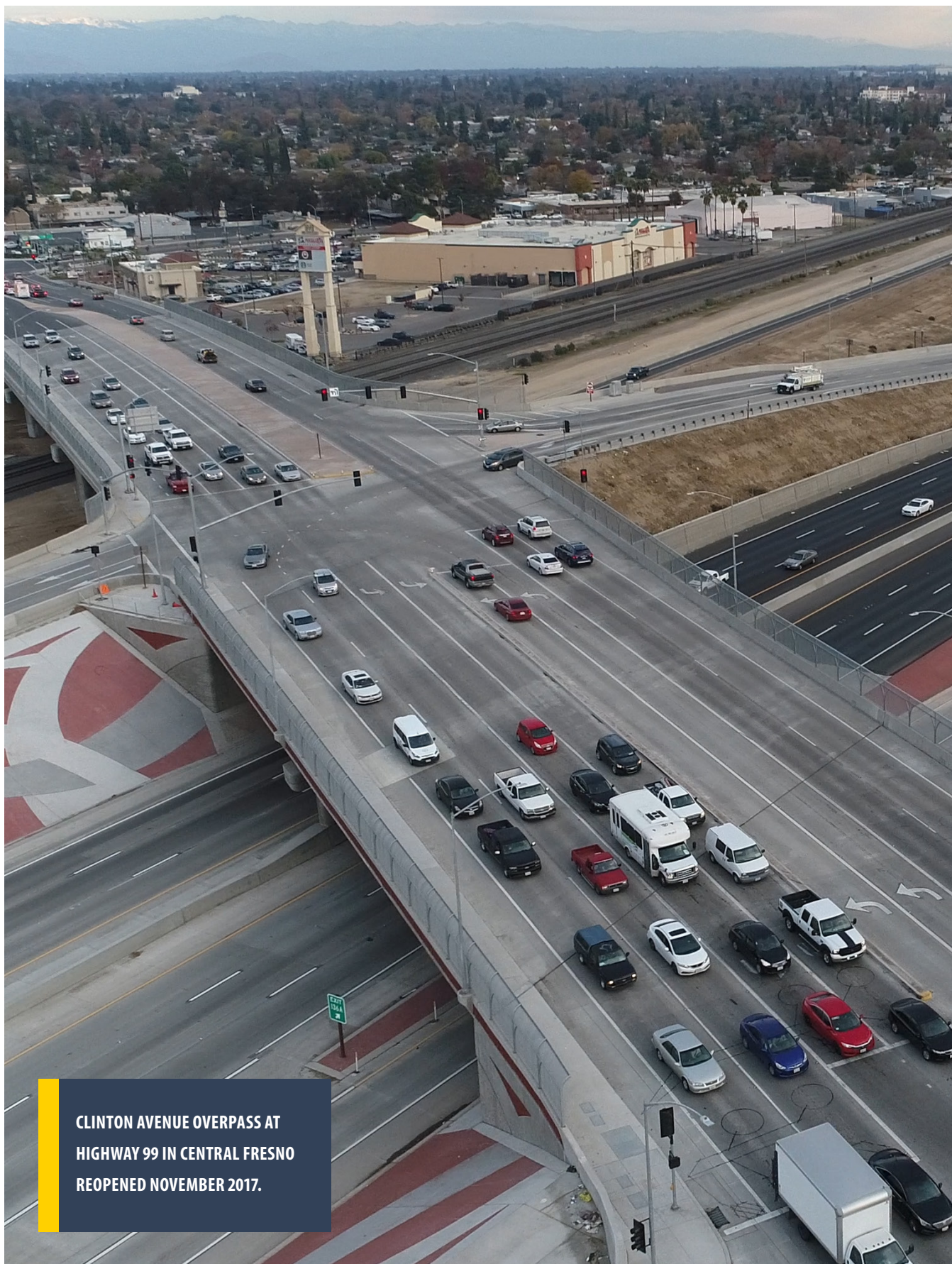
The high-speed rail program could experience adverse effects if public support declined at either the local or statewide level. Local or regional stakeholders or community interest groups could attempt to prevent or delay advancement of the system by hampering the environmental process, local authorization and permitting processes, or inhibiting local collaboration. At the state level, a decline in public support could translate into reduced political support for the program or and/or funding support and oversight functions. Maintaining strong public support at all levels through education and outreach, while clearly vital, also poses its own risks to the system if expectations are not prudently managed and mitigated.

If the Authority does not clearly articulate both the program's impacts, costs and benefits, support could weaken. As well, if the Authority agrees to mitigations without first determining their cost implications for the overall program, there is a risk that public support will erode and/or the program's overall costs could exceed current estimates.

Mitigation

Mitigation of this risk is managed at all levels within the organization, both statewide and at the regional level. At the state level, ongoing communication with legislators and state agencies ensures that current and factual information is shared at multiple levels. Similarly, at the federal level, Authority staff maintain an ongoing line of communication with members of Congress and their staff and with federal agencies.

At the regional/project section level, outreach activities include open house community meetings, community and technical working groups, as well as community and stakeholder outreach specific to each project section's needs. The Regional Directors and local section outreach teams act as a point of contact for local and regional stakeholders to address community needs and concerns related to potential project effects in their regions. Regular stakeholder and/or public meetings are held to facilitate communication opportunities and relationships between the high-speed rail program and its myriad publics.



**CLINTON AVENUE OVERPASS AT
HIGHWAY 99 IN CENTRAL FRESNO
REOPENED NOVEMBER 2017.**

CLINTON AVENUE OVERPASS



CHAPTER 7: PROGRAM AND REGIONAL SUMMARIES

Legislative Requirement: This section covers statutory requirement (f) A summary of milestones achieved during the prior two-year period and milestones expected to be reached in the coming two-year period.

While the Authority plans for future operations, staff continue to make progress every day on the delivery of the federal grant scope of work. Staff remains focused on meeting this first milestone. This chapter summarizes the program milestones achieved and those that are planned for the next two years. In addition, separate sections provide an overview for Northern, Central Valley and Southern California regions.



**UNIQUE GUIDEWAY DETAILING
IDENTIFIES STRUCTURES AS
CALIFORNIA HIGH-SPEED RAIL.**

Program Milestones Achieved

The following summarizes several significant milestones that have been achieved at the program level. Evidence of this progress includes, but is not limited to, the following high-level achievements:

- The three Construction Packages (CP 1, CP 2-3 and CP 4) advanced on final design, construction continues in the Central Valley over a 119-mile stretch at more than 24 active sites.
- The direct impact of the Authority's investment between July 2017 and June 2018 is equivalent to about 18 percent of the 14,000 jobs that the Central Valley economy added over the same period.
- Three major structures were completed in the Central Valley—the Cottonwood Creek Bridge, the Fresno River Bridge and the Tuolumne Street Bridge, which opened to traffic in August 2017.
- In May 2018, the Authority achieved a major milestone—the creation of more than 2,000 construction jobs since the start of the high-speed rail project. As of January 2019, 2,573 construction jobs have been created in the Central Valley.
- The Authority reached fundamental agreements with Union Pacific Railroad (UPRR) and BNSF Railway Company (BNSF) that are necessary for construction. The Authority continues to work with the railroad companies to address issues including operational planning, safety and security assessments, and other coordination needed for high-speed rail implementation.
- In partnership with Caltrans, the Authority achieved the realignment of State Route 99 (SR 99) in Fresno, completed February 2019.
- The Authority has produced a monthly Program Delivery and Status Report (PDSR), a detailed report measuring status of statewide environmental clearance and Central Valley design and construction. This document is used to actively measure progress and trend for the program so that risks can be managed.
- The Authority met the September 2017 deadline for expending the federal American Recovery and Reinvestment Act (ARRA) grant funding awarded in 2010. In so doing, the Authority worked closely with the Federal Railroad Administration (FRA) to ensure that grant obligations were being met and that ARRA funds were successfully managed to meet the deadline.
- As of December 2018, the high-speed rail project hit a significant milestone with 500 small businesses now working on the project.



EXHIBIT 7.0: CP1-4 AREAS OF CONSTRUCTION COMPLETED

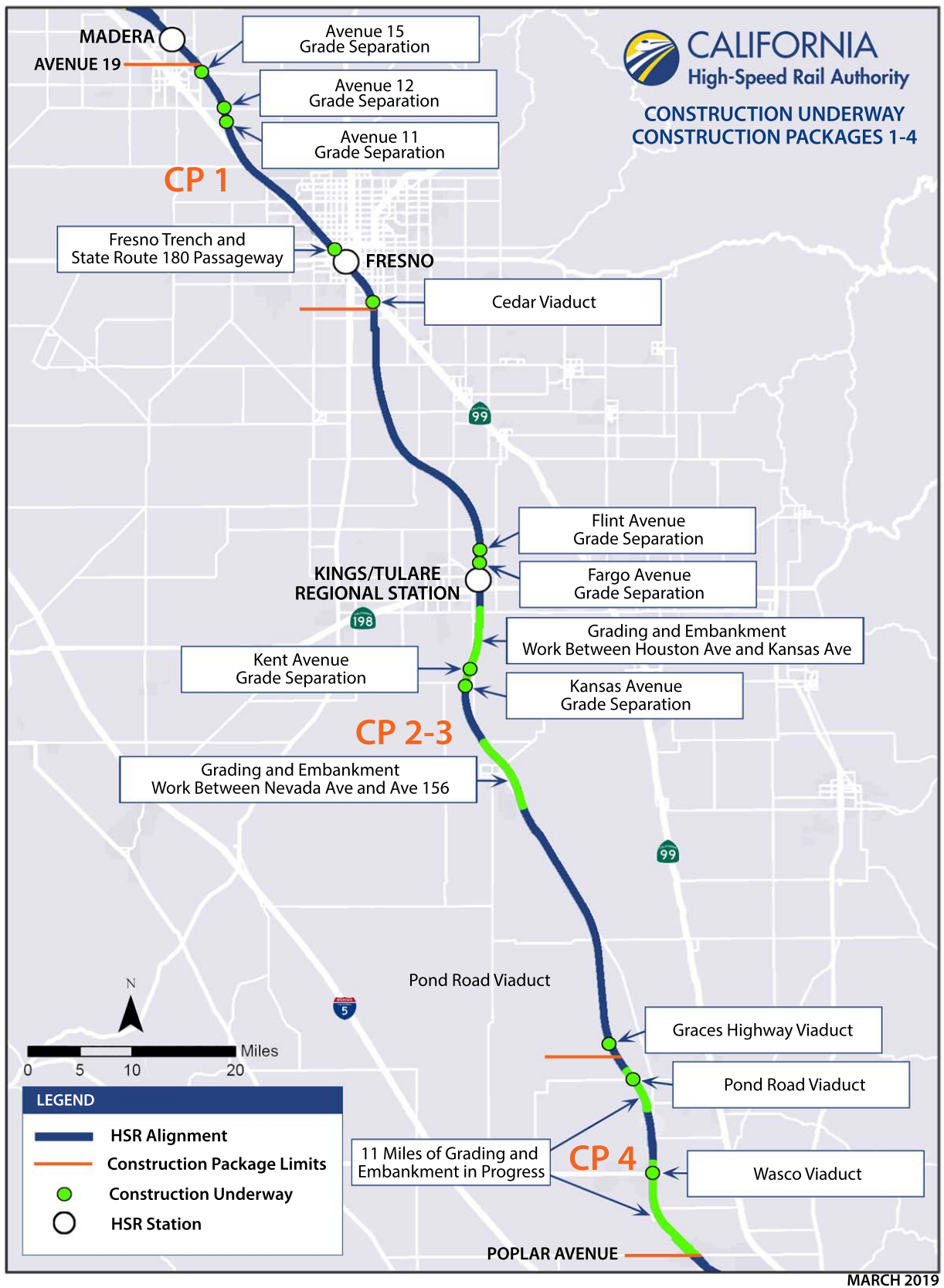


EXHIBIT 7.1: CP1-4 AREAS OF CONSTRUCTION UNDERWAY

Areas of Construction Completed

The Authority has made significant progress on the ground, as illustrated in **Exhibit 7.0** on page 108, with all three construction packages showing marked improvements.

CP 1 work substantially completed:

- Muscat Ave overhead crossing;
- Tuolumne St overhead crossing;
- Cottonwood Creek Bridge;
- Fresno River viaduct;
- 90 percent of the design work is complete; and
- 93 percent of the right-of-way parcels delivered (816 parcels).

CP 2-3 work substantially completed:

- 12 miles of grading/guideway embankment work substantially complete between American and Canejo avenues;
- Precast facility complete and operational;
- 90 percent of the design work is complete; and
- 69 percent of the right-of-way parcels delivered (521 parcels).

CP 4 work substantially completed:

- 90 percent of the design work completed; and
- 86 percent of the right-of-way parcels delivered (164 parcels).

Areas of Construction Underway

Each construction package also demonstrates noteworthy increases in work in progress, as illustrated in **Exhibit 7.1** on page 109. The examples below represent only a sample of the magnitude of work currently underway in each construction area.

CP 1 work in progress:

- Avenue 15—west side abutment wall and center pier construction is ongoing;
- Avenue 12—concrete deck completed and are now setting concrete forms for barrier walls along the sides of the Avenue 12;
- Avenue 11—mostly complete, but final paving for the approaches waits for better weather;
- Golden State Blvd.—realignment of Herndon Canal to Herndon;
- Fresno Trench—finishing the retaining walls and excavation works ongoing; and
- Cedar Viaduct—continuing extending the structure across State Route 99 south of Fresno. Pier construction on both side of SR99 is ongoing.

CP 2-3 work in progress:

- 21 miles of grading and embankment work is in progress between Nevada Avenue and Avenue 156, and Houston Avenue to Kansas Avenue;
- AT&T utility relocation works are ongoing at various locations in segment 1;

- Geotechnical investigation works are ongoing at various locations in segments 1 and 3;
- Kansas Avenue—abutments for the bridge structure have already been completed and excavation works are ongoing;
- Kent Avenue—abutments and pier construction nearly completed and bridge girder erection in progress;
- Fargo Ave—embankment construction is ongoing; and
- Flint—embankment works are ongoing.

CP 4 work in progress:

- 11 miles of grading and embankment work is in progress;
- Wasco Viaduct—installation of the cast-in-drilled-hole (CIDH) piling;
- Pond Road—abutment 2 construction; and
- Garces Highway—installation of the CIDH piling.

Jobs Created

Designing, planning and building the nation's first high-speed rail system has stimulated job growth across the state. From July 2006 through June 2018, the Authority invested more than \$4.8 billion in planning and constructing the high-speed rail system. This investment created jobs and generated economic activity in numerous ways. High-speed rail contractors hire workers throughout the state and pay other businesses for goods and services. Workers spend their earnings throughout the economy. Together, these direct and indirect effects induced statewide economic activity by pumping money back into regional and local economies.

The Authority and its contractors have adopted and implemented programs designed to promote and advance construction employment and training opportunities for all individuals, especially those residing in extremely economically disadvantaged areas and for veterans returning from military service.

Number of jobs, per construction package, as of March 31, 2019:

- CP 1: 1,878;
- CP 2-3: 762; and
- CP 4: 300.

Overall, the Authority's investment supported 37,600 to 42,600 job-years of employment and generated \$6.8 to \$7.6 billion in total economic activity, as shown in **Exhibit 7.2**. The investment also created \$2.6 to \$3 billion in labor income, which is all forms of employment income associated with the activity, including employee compensation (wages and benefits) and business owner income.



**JOB-YEARS OF
EMPLOYMENT**

37,600 - 42,600



**LABOR
INCOME**

\$2.6B - \$3B



**ECONOMIC
OUTPUT**

\$6.8B - \$7.6B

EXHIBIT 7.2: STATEWIDE ECONOMIC BENEFITS FROM INVESTMENTS THROUGH JUNE 2018

In time, permanent jobs will be created for train operators, maintenance yard workers, station managers and others to operate and maintain the system. However, there will be additional benefits beyond just building the system and operating trains.

500
Small Businesses
STATEWIDE*

***THROUGH DECEMBER 2018**

Increased Small Business Participation

The Authority is fully committed to small businesses playing a major role in building high-speed rail. The small business participation goal for the high-speed rail project is a combined goal of 30 percent for all small businesses, including Small Businesses (SB), Disadvantaged Business Enterprises (DBE) and Disabled Veteran Business Enterprises (DVBE).

In its 2017 Project Update Report, the Authority reported that professional services contractors collectively met the 30 percent small business goal for the high-speed rail project, although the design-build contractors were working to meet their targets. It's important to note that construction activities in 2017 had not significantly ramped up.

In this 2019 Project Update Report, the Authority is pleased to announce that professional services contractors and design-build contractors collectively met the 30-percent small business participation goal for the high-speed rail project.

In its 2017 Project Update Report, the Authority reported that 334 small businesses were working on the project statewide, which included 102 DBE and 39 DVBE. Those numbers have increased. The Authority hit a milestone at the end of 2018, with 500 small businesses working on the high-speed rail project statewide, including 164 DBE and 53 DVBE.

Small business revenue, by construction package, as of March 28, 2019:

- CP 1: \$210.8 million;
- CP 2-3: \$26.2 million; and
- CP 4: \$13.8 million.

Organizational Readiness

In our 2018 Business Plan, we clearly identified areas where our organizational capabilities were not fully developed, and we put plans in motion to address these areas. Later in 2018, the California State Auditor's report highlighted additional areas that deserved our focus. When we started construction, we struggled with making the transition from strategic planning to project delivery. We were transparent about these challenges in the 2018 Business Plan and presented our strategies to create a mature organization; one with sufficient delivery capacity and capabilities.

We have added construction management expertise and expanded project controls expertise in the field and at the program level. We expanded our reporting tools to provide project managers with real-time performance information. These actions have allowed us to gather more precise details, which then inform more exact reporting on scope, schedule and cost risks.

We have also hired specialized expertise to assist with complicated utility agreements and relocation coordination. We instituted "get-to-work" schedule reviews to ensure agreements are completed and that we achieve the various stages of review and approval. We hired a risk manager with experience in public-sector and international projects to add specialized knowledge on qualitative and quantitative risk analysis, commercial risk-register development, advanced Monte Carlo-based cost and schedule analytics, and project auditing.

We want to "move the dial" on construction in the Central Valley. Our Chief Operating Officer (COO) set out a construction expenditure plan required to meet the December 31, 2022, federal grant deadline. In addition, the COO created cross-functional "Strike

Teams" to clear project work sites and resolve commercial contractor charges and claims to increase construction productivity.

Program Delivery Status Report

We also began producing a monthly Program Delivery Status Report (PDSR) in the fall of 2018. The PDSR includes comprehensive status information within the Authority's three main areas of project delivery:

- Right-of-way procurement, third party agreements and environmental clearance;
- Engineering/design and construction; and
- Rail infrastructure.

The PDSR provides detailed information on the progress of the three Central Valley construction projects, including cost variance and a schedule performance index (SPI).

Confidence Meetings

The Confidence Meetings provide a venue for the project teams to present the status of their projects to Authority senior management, the COO and all functional leads. The main intent of these meetings is to provide the senior management the confidence that the projects are being managed to meet the required objectives and to highlight any issues that may need senior management intervention. The presentations by the project teams involve the status of safety, quality, cost, schedules, critical issues impacting the project and what the project team is doing to resolve them. These meetings facilitate transparency across the organization and awareness of the issues that are affecting the project teams so those issues can be resolved to make progress.

Supporting Project Delivery

We are ensuring that headquarters and field resources are closely aligned by clarifying roles, responsibilities and accountability across the program. We identified internal subject-matter experts—including engineering, legal, administration, real estate and environmental—to directly support project delivery in the field. We established a Quality Management team to focus on driving standardization across the organization, setting a foundation for eventual ISO certification.

The goal is to finish the first order of work, especially utility relocations, at relevant worksites in the construction packages.

Improved Program Controls

The Authority developed a standardized set of program controls processes, procedures and systems that have been implemented across the program and projects to eliminate duplication and making it easier to function as an integrated team. We have developed an agile and lean organization that adapts to evolving requirements and is responsive to new challenges. The matrix organization developed within program controls aligns a variety of critical program requirements that are commonplace on mega-projects worldwide. The services now provided include: aligned resource balancing and streamlined reporting through more organized data structures (work breakdown structures), creating a structured, repeatable monthly work cycle. This work includes the following improvements.

Established partnership with finance and all functional and delivery groups: To develop a bottoms-up estimate and risk profile, partnerships

are required between all departments on mega infrastructure programs. To obtain transparent, repeatable inputs based on an established criterion and methodology, the partnerships facilitate simplified data management processes to maximize repeatability and ensure higher quality reporting standards.

Restructured project controls processes and procedures consistent with industry best practices:

We conducted a gap analysis of all processes and procedures associated with existing Program Controls Service Center. We identified areas of inconsistency and redundancy between scope and cost estimation, scheduling and risk analytics and developed actionable plans for increased integration and aligned with Project Management Body of Knowledge Guide & Standards.

Developed program baseline refinement cycle:

We established an integration of scope, cost, schedule and risk. The Program Controls team takes a proactive role in monitoring the cost and schedule performance against the program baseline and takes responsibility for addressing cost/schedule-related issues as they arise.

Robust platform of program control tools and systems:

Developed and implemented a single, integrated platform comprised of estimate, schedule and current cost management system data. This enabled the rapid development of baseline scope, cost and time forecast scenarios and produced an integrated baseline file for implementation into all program controls applications. Additionally, the implementation of best in class business intelligence and data visualization tools greatly facilitated the speed and accuracy of scenario analysis and refinement.

Cost management: Improved cost and budget management procedures for efficient management of the approved baseline. The improved procedures allowed to efficiently monitor and control the program cost to be managed within the approved baseline. Improved forecasting procedures to obtain more accurate spend projections at contract levels and at the end of the fiscal year. Developed cost management system for data management, monitoring, controlling and reporting.

Schedule management: Prepared Standard Operation Procedure as part of the manual for Schedule Oversight and Analysis. Developed a revised Schedule Management Plan to identify roles, responsibilities and reporting relative to the Work Breakdown Structure (WBS). Put together a training program and defined a process for Schedule Oversight for implementation by the Project Controls Coordinators (PCC). This will be used by the Project Construction Management (PCM) teams in the field.

Change management: The Authority developed a standardized program change control process to ensure consistent and robust analysis on proposed changes. Any change to the program baseline will go through a robust process subject to a structured evaluation, review and approval process prior to implementation

Risk management: Developed a robust bottom-up, risk-informed baseline that considers not only the cost for identified scope but also risks associated with delivering the program. The risk management team developed quantitative risk models cost and schedule (Monte Carlo simulation) at project levels and roll-up of the models to determine risk exposure at the program level which highlights the probability of success and hotspots that can be controlled to improve program's success. With the establishment

of the risk-informed baseline, the risk management team has now transitioned focus from early phase Identification, Assessment and Analysis to Mitigation of risks to control the risk profile and reduce the amount of contingency needed. The team is regularly facilitating regular risk workshops at project and regional levels to emphasize importance of risk management on the program and help manage risks at the project/regional/program level.

Streamlined reporting: Improved the current reporting process for program, delivery and functional reports and dashboards as part of the Program Delivery Status Report that are produced and published monthly:

- Developed templates for easy, consistent, and timely reporting on the overall program;
- Increased visibility and gave full insight into the program and project; and
- Increase transparency and confidence in figures to make informed decision both at program and project levels.

Mitigating Construction Impacts

Our goal is to create the greenest infrastructure project in the nation, both in its operations and its construction, and we are already putting sustainability into action.

We use innovative methods to achieve net-zero emissions from construction. One way we achieve this is through requiring our contractors to use equipment that avoids or significantly eliminates air pollution during construction. Our construction sites are 50- to 60 percent cleaner than typical California construction sites.

We have already offset both air pollution and direct greenhouse gas emissions from construction through local programs, including tree planting and replacing tractors, with special focus on priority communities. Our progress has been marked by several achievements, including:

- For the second year in a row, named as the top sustainable infrastructure project in North America by theGRESB Infrastructure Assessment, which benchmarks our environmental, social and governance policies, practices and performance;
- Preserving and restoring more than 2,500 acres of natural habitat;
- Obtaining approval of 1,200 acres of agricultural land for conservation;
- Working with the California Farmland Conservancy Program to secure 273 deeded acres of agricultural land for conservation;
- Partnering with Tree Fresno to plant 2,400 trees in schools and parks in the Fresno area;
- Avoiding more than 50,000 pounds of criteria air pollutants;
- Putting 2,600 people to work across 17 construction sites and generating economic opportunity for hundreds of businesses including small and disadvantaged businesses; and
- Launching a process to update our Sustainability Implementation Plan.

Going forward, we intend to take a holistic approach to our sustainability commitments. This includes

greater integration of sustainability into all aspects of how we conduct business and developing a sustainability dashboard to provide ongoing and timely monitoring of our performance to our Board of Directors and our stakeholders.

Program Milestones to Follow

Over the next two years, the Authority will continue to advance construction in the Central Valley to lay the foundation for the Merced-Fresno-Bakersfield line, move important environmental documents through the approval process and release critical procurements.

Construction

The Authority is working with a variety of third parties, such as the Fresno Metropolitan Flood Control District and the Madera Irrigation District, on upcoming construction activities tied to Construction Package 1 (CP 1). Upcoming construction activities include various avenue overpasses, several utility relocations as well as hazmat abatement and demolition of structures.

For Construction Package 2 and 3 (CP 2-3), the Authority is working with third parties, including the California Department of Fish and Wildlife and Fresno County, on upcoming construction activities. Upcoming construction activities include various avenue overpasses and the Kings River Structure.

The Authority is also working third parties, such as Southern California Gas Company and the City of Wasco, on upcoming construction activities tied to Construction Package 4 (CP 4). Upcoming

construction activities include clearing the northern and southern sections of the CP 4 alignment as well as the Wasco Viaduct. For more information on construction underway see the Central Valley regional summary.

Environmental Documents

The Authority intends to continue using a two-step environmental clearance process pending resolving issues with the FRA on federal NEPA assignment for environmental approvals. In April, the Authority plans to release for public review the Central Valley Wye Draft Supplemental Environmental Impact Report/ Environmental Impact Statement (Draft Supplemental EIR/EIS), which is a supplement to the Merced to Fresno Section Final Environmental Impact Report/ Environmental Impact Statement.

Procurements

As funding decisions are made and further discussions take place, the Authority will consider the timing of procurements for long lead items, such as track and systems and trains, to prepare for test operations.

Regional Milestones

Work on the high-speed rail system is well underway in Northern California, the Central Valley and Southern California. This includes the Caltrain electrification project, the 25th Avenue Grade Separation Project and completion of the Salesforce Transit Center in Northern California; the construction that is happening in the Central Valley; and the completion of the Anaheim Regional Transit Intermodal Center in Southern California.

In addition, significant project-development work is underway to set the stage for moving forward on future construction:

- Northern California: planning for the Diridon Integrated Station Concept;
- Central Valley: environmental clearances for extensions to Bakersfield and Merced; and in
- Southern California: the Rosecrans/ Marquardt Grade Separation Project and advancing environmental documentation for the Link US project.

The focus in Northern and Southern California is on advancing planning for the system, obtaining environmental approvals and making key investments in crucial bookend and connectivity projects as part of California's Statewide Rail Modernization Plan. A well-developed community outreach and stakeholder engagement program support these activities.

A fundamental objective of the high-speed rail program is to make strategic investments throughout California that will deliver early benefits to local and regional future and existing rail systems, which will, in turn, lay the foundation for high-speed rail service. The Authority is currently working with state, regional and local partners to advance significant concurrent investments to existing regional rail systems that will serve as the building blocks for high-speed rail.

This chapter discusses the progress made in each region since the 2017 Project Update Report.



PHOTO: CONSTRUCTION CONTINUES IN THE CENTRAL VALLEY, LAYING THE FOUNDATION FOR THE SYSTEM.

Expenditures To-Date by Region (Summary)

Table 7.0 presents a summary of program expenditures summarized by Pre-Construction Phase 1 (completion of environmental documents); Construction; Pre-Construction Phase 2 (planning) and Program-Wide (agency and program-management costs in the pre-construction and construction phases).

The Authority prepares comprehensive updates on all pre-construction contracts and presents the information to the Board of Directors' Finance and Audit Committee for review on a monthly basis. **Table 7.0** summarizes information from the Finance and Audit Committee Contracts and Expenditures and Capital Outlay and Expenditure reports. These reports can be found on the Authority's website at: www.hsr.ca.gov/Board/monthly_fa_committee_meeting.html

TABLE 7.0: REGIONAL EXPENDITURES AS OF 1/31/19 (DOLLARS IN MILLIONS)

Region	Expenditures
Pre-Construction Phase 1 (by region)	
Northern	\$91
Central	\$263
Southern California	\$286
Pre-Construction Phase 1 Total:	\$640
Construction (Central Valley)	
Central Valley	\$1,905
Pre-Construction Phase 2 (by region)	
Northern	\$27
Southern	\$16
Pre-Construction Phase 2 Total:	\$43
Program-wide	
Agency Costs and other ¹	\$191
Program Management	\$256
Rail Delivery Partner ²	\$368
Program-wide Total	\$815
Grand Total	\$3,403
¹ - Current Contract Value includes pre-construction costs for various Resource agencies and Legal current commitments and future works as outlined in December 31, 2018, Capital Outlay Summary Report.	
² - Includes pre-construction and construction costs as outlined in the December 31, 2018, Capital Outlay Summary Report.	

**EXHIBIT 7.3: STATEWIDE RAIL MODERNIZATION MAP**

CalSTA Statewide Rail Modernization Program

The California State Transportation Agency's (CalSTA) 2018 State Rail Plan lays out the blueprint for the cost-effective expansion of transit service across the state and describes the role high-speed rail plays in the vision to provide better service to customers and, thus, to attract riders to these systems.

This integrated, phased approach brings incremental benefits over time and is made possible through new funding sources and stronger partnerships. Significant operational analysis supports this effort, which brought together multi-jurisdictional and multi-agency working groups to identify and analyze operational issues and conflicts. This ensured that the most cost-effective improvements were identified that met the needs of various service providers – including requirements from passenger as well as freight service providers.

The State Rail Plan addresses some of the most heavily congested urban rail corridors in Northern and Southern California, as shown in **Exhibit 7.3**. The Authority remains committed to advancing the high-speed rail program in these regions with specific investments in high-demand travel corridors, such as San Francisco to San José and Gilroy, and Burbank to Anaheim. For example, Caltrain is developing a service vision and business plan to help shape the future growth of the system. This effort has expanded the planning horizon for investment in the corridor beyond the introduction of high-speed rail and toward a high-performance modern rail system.

Each region will see significant near-term benefits from these investments to increase capacity and frequency, air-quality improvements, enhanced safety, increased mobility and other community benefits.

The Authority coordinates extensively with CalSTA and other regional partners on planning and implementing the overall Statewide Rail Modernization Program.

The goal is to incorporate high-speed rail into a single, integrated state rail improvement strategy.

The high-speed rail system provides much greater benefit to the state when planned and implemented in a manner that complements connecting transit and rail services. Ridership and revenue for all services are enhanced if connecting services are integrated with high-speed rail services through timed connections and an integrated ticketing system, as discussed in the 2018 State Rail Plan.

The Authority's regional investments will provide a solid foundation for future high-speed rail service, and work is ongoing with regional, state, and federal partners to get the system shovel-ready in Northern and Southern California while we pursue additional funds that will help pay for the system's construction.



EXHIBIT 7.4: HIGH-SPEED RAIL PROJECT SECTION MAP - NORTHERN CALIFORNIA

Northern California

Working with partners to accelerate regionally significant connectivity projects

The last year marked substantial progress in bringing high-speed rail to Northern California. With the completion and opening of the Salesforce Transit Center and the continued progress on the electrification of the Caltrain Corridor, elements of what will become the high-speed rail system can already be seen today.

The Authority has also made significant progress toward completing the environmental analysis of the two Northern California project sections (San Francisco to San José and San José to Merced).



SAN JOSÉ



THE PACHECO PASS WILL LINK
THE SILICON VALLEY AND SAN
FRANCISCO TO THE CENTRAL
VALLEY.

ARTIST CONCEPT

Each of these pieces are important components of the state rail network that will make it easier to travel within Northern California and between the Bay Area and the rest of the state. The introduction of high-speed rail service will be just one part of this effort, but, taken together, these investments will propel and sustain the California and Bay Area economies while contributing to the reductions in greenhouse gas emissions that will be necessary to meet California's aggressive climate goals.

Northern California Regional Overview

Northern California is home to the high-speed rail system's northern terminus in San Francisco.

Project Sections

This corridor contains two project sections summarized below.

San Francisco to San José

High-speed rail will operate on this 51-mile route between San Francisco and San José, using the upgraded Caltrain corridor. Working together, Caltrain and the Authority are in the process of electrifying the corridor, which will allow for both operators to share tracks in a blended system. Passenger service will ultimately run to the Salesforce Transit Center once a connection is made to the existing rail corridor, replacing Caltrain's 4th and King Station as the ultimate northern terminus for high-speed rail trains.

San José to Merced

This 84-mile route will travel from Diridon Station in downtown San José, through the Pacheco Pass, to the

western limits of the Central Valley Wye, approximately nine miles northeast of Los Banos in Merced County.

Stations

The Northern California region includes four high-speed rail stations.

Salesforce Transit Center

The Salesforce Transit Center will ultimately serve as the Northern California hub for future high-speed rail service from Los Angeles to San Francisco. Including high-speed rail, the transit center will serve 11 transportation systems:

- BART;
- SamTrans;
- Muni;
- AC Transit;
- Greyhound;
- Caltrain;
- WestCAT Lynx;
- Amtrak (bus connection);
- Golden Gate Transit; and
- Paratransit.

Millbrae Intermodal Station

Located in the San Francisco to San José project segment, the Millbrae Intermodal Station will provide key connections north and east via BART, to the north and south via Caltrain, and globally with connections at San Francisco International Airport (SFO).

Opportunities around the station include:

- Maximizing economic development potential at and near the station;

- Encouraging transit-oriented development and higher density development in the area immediately surrounding the station; and
- Recognizing the regional scale and function of the station as the nation's first, world-class integrated airport/high-speed rail station serving as an engine to elevate the status and economic drive of the Bay Area.

In addition to the economic and housing opportunities available at and around the station, the linkage with SFO provides an important connection for the statewide high-speed rail system. SFO currently serves approximately 58 million passengers annually which will grow in the future. SFO is also a major regional employer with approximately 44,000 employees, and some of these employees travel to the airport from as far away as the Central Valley.

The linkage between the Millbrae Intermodal Station and SFO will allow travelers to access the airport from all over the state using the high-speed rail system while reducing some of the intra-state short-haul flights that limit the airport's capacity. It will also provide an opportunity to create a regional multimodal hub with statewide, national and international connections.

Diridon Station

The Authority, VTA, Caltrain and the City of San José entered into a cooperative agreement to develop and implement a shared vision/strategy for the design, environmental clearance, construction and operation of a future Diridon Station. The goal is to move a shared approach forward at the station, acknowledging Google's role as a Master Developer around the station.

The Diridon Station Integrated Concept Plan (DISC) creates an integrated plan for the station and the area surrounding the station. The agency partners engaged the consulting firm of Arcadis and Bentham Crouwel Architects (ABC) to develop a concept plan for the Diridon Station.

Gilroy

Positioned in a key location to become a central transportation hub, the City of Gilroy lies approximately 32 miles south of the City of San José. At the southern tip of Santa Clara County, Gilroy is not only the first Bay Area stop on the Silicon Valley to Central Valley Line, it is also a gateway north to Silicon Valley and the greater San Francisco Bay Area and provides access to future rail service south into the Central Coast.

High-speed rail development in Gilroy is expected to spur increases in transit, additional rail service, and local and regional development. With continued growth in the Silicon Valley, including the new Google facility in downtown San José, Gilroy is ideally situated to take advantage of the potential for economic growth. High-speed rail will provide all-day service between Gilroy and the rest of the Bay Area, with trip times as low as 25 minutes from Gilroy to San José. The blended service to Gilroy is also expected to provide opportunities for the expansion of Caltrain service in this corridor.

Several proposed regional rail expansion projects are under discussion or in planning south of Gilroy and would expand future service to Santa Cruz, Hollister, Salinas and Monterey. These projects include:

- Electrified blended service to Gilroy (high-speed rail/Caltrain);

- Salinas Rail (TAMC), Salinas Rail Kick Start Project;
- Monterey Branch light rail line, Monterey to Castroville; and
- Santa Cruz passenger rail to Pajaro.

Major Accomplishments

Legislative Requirements: This section covers statutory requirement (d) Expenditures to date, by segment or contract, for all project phase costs.

Over the last year, the Authority and its partners have had numerous accomplishments that will be essential toward creating a world-class rail system in Northern California and the rest of the state.

These accomplishments include:

- Execution of the Project Management and Funding Agreement (PMFA) with Caltrain for the Electrification Project—The PMFA governs the Authority's \$600 million contribution of Proposition 1A funds toward the Caltrain Electrification Project, while ensuring the Authority's ability to use the corridor for blended service in the future.
- Establishing a Range of Alternatives—With the introduction of the concept of blended electrified service between San José and Gilroy in the 2018 Business Plan, the Authority expanded the range of alternatives under study for introducing high-speed rail to Northern California. Four alternatives are now under study for the San José to Merced section and two alternatives for the San Francisco to San José section.
- Achieving Project Definition—As part of the environmental analysis for the high-speed rail system between San Francisco and Merced, the Authority finalized the project definition for both sections; an essential step in advancing the project into CEQA and NEPA evaluation. The Authority completed the initial environmental evaluation for both Northern California project sections and started the environmental evaluation for the new at-grade, blended alternative for the San José to Merced section.
- Wildlife Corridor Assessment—In collaboration with a team of varied partners, the Authority conducted assessments of sensitive wildlife-movement corridors in both the Coyote Valley and Pacheco Pass in the San José to Merced project section. The assessment results led to design changes that will minimize the rail corridor's impediment to animal movement.
- Cooperative Agreement with Caltrain, VTA and the City of San José—The Authority is working collaboratively with Diridon Station stakeholders on the DISC Plan. This agreement marks the first time that the four parties joined together to develop a vision for the intermodal station and set the organizational structure to deliver this vision.



**HIGH-SPEED RAIL IS WORKING
WITH COMMUNITIES TO DEVELOP
STATIONS THAT FIT THEIR
ENVIRONMENT.**

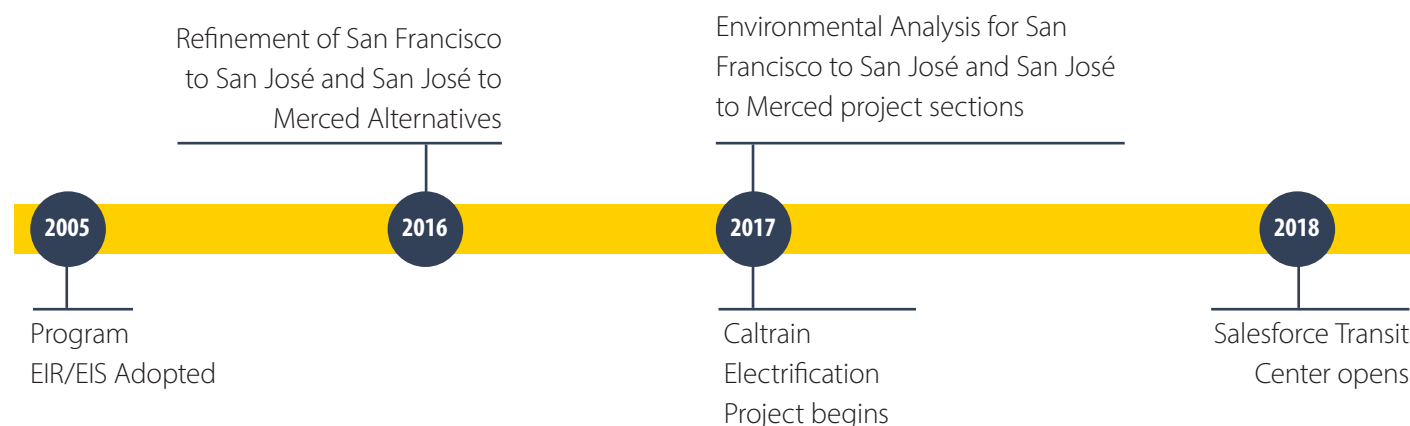
ARTIST CONCEPT

Table 7.1 summarizes the costs by major contract for Northern California. Two contracts related to earlier environmental work are complete and closed out. The remaining contract with HNTB is for both project

sections within the Northern region and will conclude with the completion of the environmental Record of Decision for each segment.

TABLE 7.1: PRE-CONSTRUCTION PHASE BUDGETS BY CONTRACT AS OF 01/31/19 (DOLLARS IN MILLIONS)

Section	Contract Start Date	Board Authorization for Amendment	Current Contract Completion	Current Contract Value	Projected Cost at Complete	Expenditures
San Francisco – San José (HNTB)	February 2007	N/A	Completed	--	\$45	\$45
San Francisco – San José; and San José – Merced (HNTB)	November 2015	May 2018	September 2021	\$76	\$76	\$47
San José – Merced (Parsons Transportation Group)	December 2008	N/A	Completed	--	\$45	\$45



Milestones Achieved

Legislative Requirement: This section covers statutory requirement (f) A summary of milestones achieved during the prior two-year period and milestones expected to be reached in the coming two-year period.

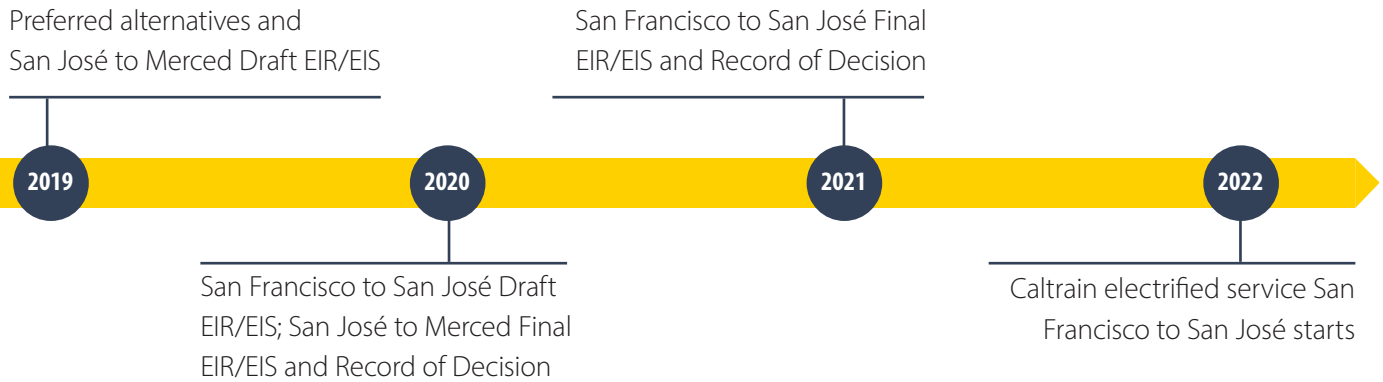
We continue to work with regional rail providers to build projects that will provide early benefits while laying the foundation for future high-speed rail operations. This approach is integral to the strategy for delivering the Phase 1 System. Over the last several years, the Authority, working with partner agencies, allocated and received authorization from the Department of Finance to invest nearly \$700 million in Proposition 1A bond funds for improvements in the blended sections. Additional bookend investments that are still being finalized will bring this total to \$1.2 billion in the next few years.

Bookends and Other Investments

Bookend projects will lay the foundation for future high-speed rail operations. In Northern California, these investments occur along the San Francisco to San José corridor.

Caltrain

The Authority committed \$713 million to the Caltrain Electrification Project, which is scheduled to be completed in 2022. The project will electrify and upgrade Caltrain's commuter rail service, which will result in improved performance, operating efficiency, capacity, safety and reliability of the service between the Caltrain Station at 4th and King in San Francisco and Tamien Station in San José. The project will also allow high-speed rail to use the corridor in the future as part of blended operations with Caltrain. Over the last year, this project continued to advance; poles for the overhead catenary system were erected and



crews began stringing the wires that will ultimately power the trains.

Salesforce Transit Center/Downtown Extension

The Authority, along with its many partners, celebrated the grand opening of the Salesforce Transit Center in San Francisco on August 10, 2018. The Salesforce Transit Center will serve as the northern terminus for high-speed rail service. The Center has been closed since September 2018 due to the discovery of cracked steel beams and remains closed for repairs expecting to last through June 2019.

The Salesforce Transit Center received \$400 million from the American Recovery and Reinvestment Act

(ARRA), which paid for the trainbox that will house the platforms and tracks for high-speed rail and Caltrain located in the basement of the Transit Center.

25th Avenue Grade Separation Project

The Authority, in partnership with the City of San Mateo is helping to grade separate E. 25th Avenue in San Mateo from the rail corridor. In addition, the project will provide an opportunity to complete east-west street connections at 28th and 31st avenues. The Authority is contributing \$84 million in funding to this important project that is constructing grade separations today, with the potential for also accommodating a future overtake track for trains to pass as the blended system expands service in the future.

TABLE 7.2: NORTHERN CALIFORNIA BOOKEND PROJECTS' FUNDING STATUS AS OF 1/31/19 (DOLLARS IN MILLIONS)

Project Name	Owner and Location	Status	Total Project Amount	Expenditures
Caltrain Electrification	Caltrain; San Francisco to San José	Under construction	\$713	\$105
25th Avenue Grade Separation	Caltrain; City of San Mateo; 25th, 28th and 31st Avenues	Under construction	\$84	\$26

Table 7.2 summarizes the current status of these projects and the funds expended as of January 31, 2019.



PHOTO: CALTRAIN ELECTRIFICATION GROUNDBREAKING - JULY 2017

Milestones to Follow

The next two years will be critical in the planning and development of high-speed rail in Northern California. By the end of 2019, the Authority will identify the preferred alternatives for both project sections and complete the environmental documents by spring 2021. This work will define more precise construction and implementation plans; advance service planning between San Francisco, San José, Gilroy and the Central Valley; and progress station development with partners at each station location.

Schedule for Environmental Documents

The Authority continues to make progress in the environmental clearance of the Northern California project sections. Over the last year, the Authority identified the range of alternatives under study, established project definitions for environmental analysis and began the technical evaluation of the range of alternatives. These efforts are the necessary prerequisites for achieving key milestones over the next two years, as detailed in **Table 7.3** on page 135.



In the summer of 2017, Google announced its intent to purchase property and develop a major campus near the Diridon Station in Downtown San José. At that time, the City of San José estimated that the addition of Google as an employer in downtown San José could add as many as 20,000 jobs in the area. Following this announcement, the city and Google began discussions regarding the acquisition of land formerly held by the City's Redevelopment Agency. In December 2018, the City of San José approved the sale of the former redevelopment lands around the Diridon Station for more than \$100 million.

Google is currently planning on developing 50 acres of land west of Highway 87 into offices, retail and housing, but this could expand if additional parcels are purchased from the City and other land holders.

Benefits of Google locating in the station area include:

- Jobs closer to the Diridon Station
- Support of higher ridership
- Potential for significant private partnership for development around station area



PHOTO: PUBLIC OUTREACH MEETING IN NORTHERN CALIFORNIA

TABLE 7.3: ENVIRONMENTAL MILESTONES

Project Section	Preferred Alternative Selected	Draft EIR/EIS	Final EIR/EIS and Receive Record of Decision
San Francisco to San José	September 2019	March 2020	March 2021
San José to Merced	September 2019	December 2019	November 2020

EXHIBIT 7.5: ESTIMATED RECORD OF DECISION (ROD) COMPLETION TIMELINE

Exhibit 7.5 shows the changes in the estimates for completing Records of Decision for the relevant project sections. Each estimate was discussed in the corresponding report identified in the legend.

The selection of a preferred alternative in September 2019 for each project section will mark a substantial milestone for the high-speed rail program, as this will complete the selection of the state's preferred route for the entire Phase 1 system. The Authority has been conducting technical analyses and engaging the public to complete a thorough assessment of the various routes under study. Ahead of the Board's action on selecting preferred alternatives, the Authority will release a staff recommendation to gather additional feedback from stakeholders and the

public to provide important feedback to the Board before it makes its decision.

The preferred alternatives are not final route selections but are meant to inform the public of the alternative that best balances the benefits and impacts of high-speed rail construction and operation. All alternatives will be studied equally in the Draft and Final EIR/EIS.

Stations

The Authority continues to work with local station communities on planning for the stations along the Phase 1 high-speed rail route. Station area planning efforts engaged local jurisdictions/joint powers, local governments, regional and local transit providers,

and other interested parties that have responsibility for providing transportation and mobility in the region.

Planning efforts have focused on station functionality; intermodal planning; station place-making; streetscapes that promote walking, biking and transit use; finance plans; zoning for residential and commercial activities; and parking strategies. Through collaborative planning, every station will reflect the unique character of each city or region, aligning community and high-speed operational needs to the relevant goals for each station.

The Authority executed agreements with governmental jurisdictions and transit providers to facilitate coordinated planning and project development to achieve successful city-regeneration opportunities and

enable more sustainable station area development and access to and from the station.

Table 7.4 summarizes the key milestones for completing existing agreements, and notes key partners involved in providing the necessary input.

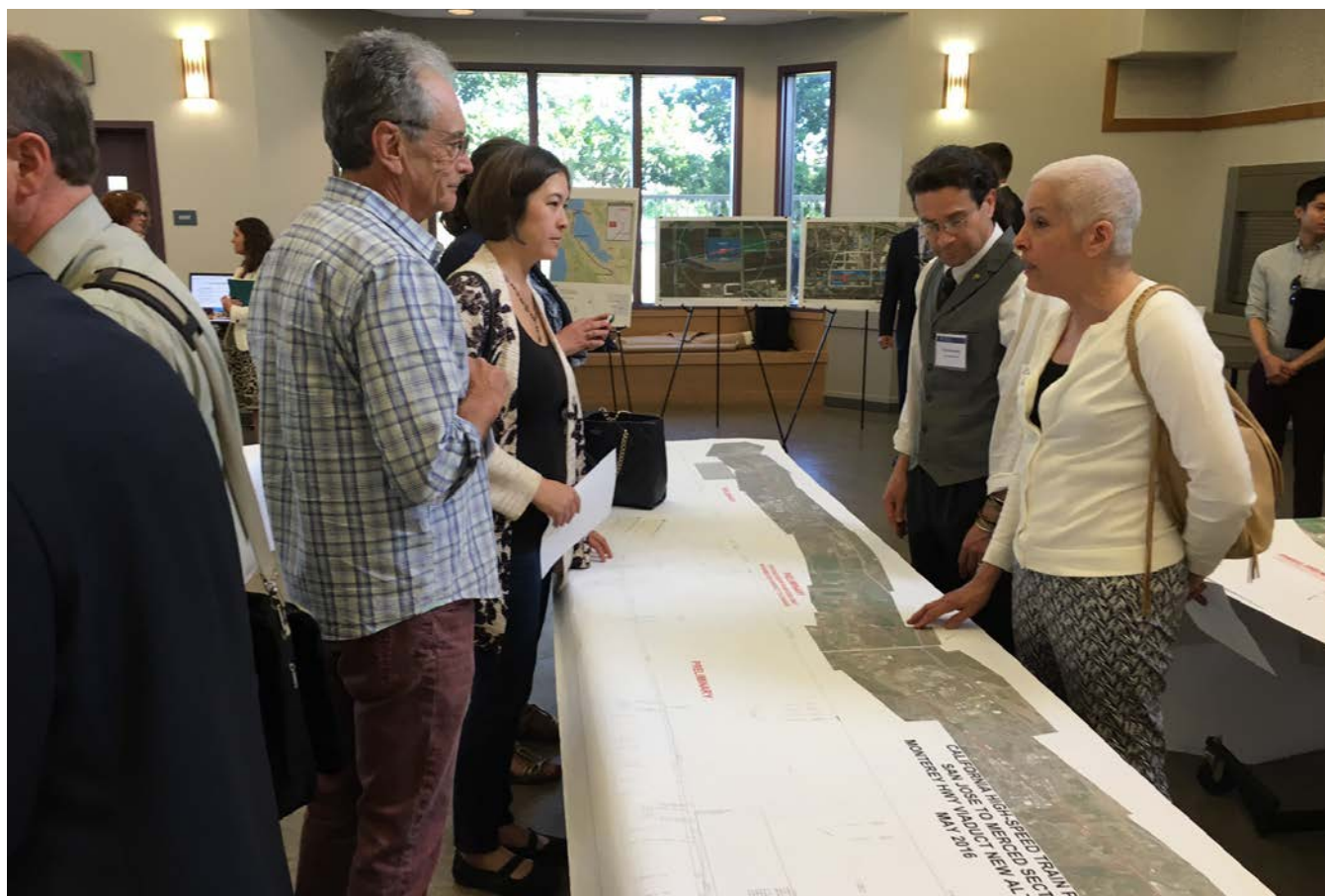


PHOTO: SAN JOSÉ PUBLIC OUTREACH IS AN IMPORTANT PART OF THE DESIGN AND CONSTRUCTION PROCESS.

TABLE 7.4: STATION AREA PLANNING DELIVERABLES – NORTHERN CALIFORNIA REGION

Station Area Jurisdiction	Description	Partners	Completion Date
City of Millbrae	Station access plan	City of Millbrae, Caltrain, BART, SFO	2020
City of San José (Diridon Integrated Station Concept)	Station plan	Santa Clara Valley Transportation Authority, City of San José, Caltrain	2020
City of Gilroy	Station area plan	City of Gilroy, Santa Clara Valley Transportation Authority	2019

**PHOTO:** SAN JOSÉ COMMUNITY MEETINGS INFORM THE PUBLIC AND SEEK INPUT.

Connectivity Projects

As the Authority takes important steps in planning and developing high-speed rail in Northern California, it will continue to work with state and regional partners to accelerate regionally significant connectivity projects. These connectivity projects can provide significant, near-term benefits to regional and urban passenger rail systems, such as Caltrain, BART, the San Joaquins and ACE, while helping to improve air quality.

As part of this effort, the Authority worked to achieve early approval and release of Proposition 1A connectivity dollars for construction on several regionally significant projects, most notably in the heavily congested urban rail corridors in the San Francisco Peninsula. By the end of 2018, the connectivity dollars appropriated by SB 1029 were all directed to significant safety, network integration, and key mobility building block projects.

Table 7.5 shows project sponsors and Proposition 1A funding for the connectivity projects in Northern California.



VISUAL: CALIFORNIA HIGH-SPEED RAIL STATIONS ARE PLANNED FOR NET-ZERO ENERGY CONSUMPTION.

TABLE 7.5: NORTHERN CALIFORNIA CONNECTIVITY PROJECTS' STATUS (FUNDING IN MILLIONS)

Sponsor	Name	Funding	Project Completion Date
San Joaquin Corridor	Positive Train Control	\$9.8	Completed
Capitol Corridor and Altamont Corridor Express	Travel Time Reduction	\$10.2	June 2019
San Joaquin Corridor	Merced to Le Grand Double Track	\$40.8	October 2020
Capitol Corridor	Sacramento to Roseville 3rd Main Track Project	\$5.7	September 2022
Sacramento Regional Transit	Intermodal Facility Improvements	\$1.2	June 2022
Peninsula Corridor Joint Powers Board (PCJPB)	Caltrain Advanced Signal System/Positive Train Control	\$105.5	October 2020
San Francisco Municipal Transportation Agency	Central Subway	\$61.4	December 2020
San Francisco Bay Area Rapid Transit (BART)	Millbrae Station Track Improvement and Car Purchase	\$140.0	May 2026
San Joaquin Regional Rail Commission (SJRRRC)	Stockton Passenger Track Extension	\$5.7	June 2022
San Francisco Bay Area Rapid Transit (BART)	Maintenance Shop and Yard Improvements	\$78.6	January 2024



EXHIBIT 7.6: HIGH-SPEED RAIL PROJECT SECTION MAP - CENTRAL VALLEY

Central Valley

\$3.4 billion invested on construction related activities in the Central Valley

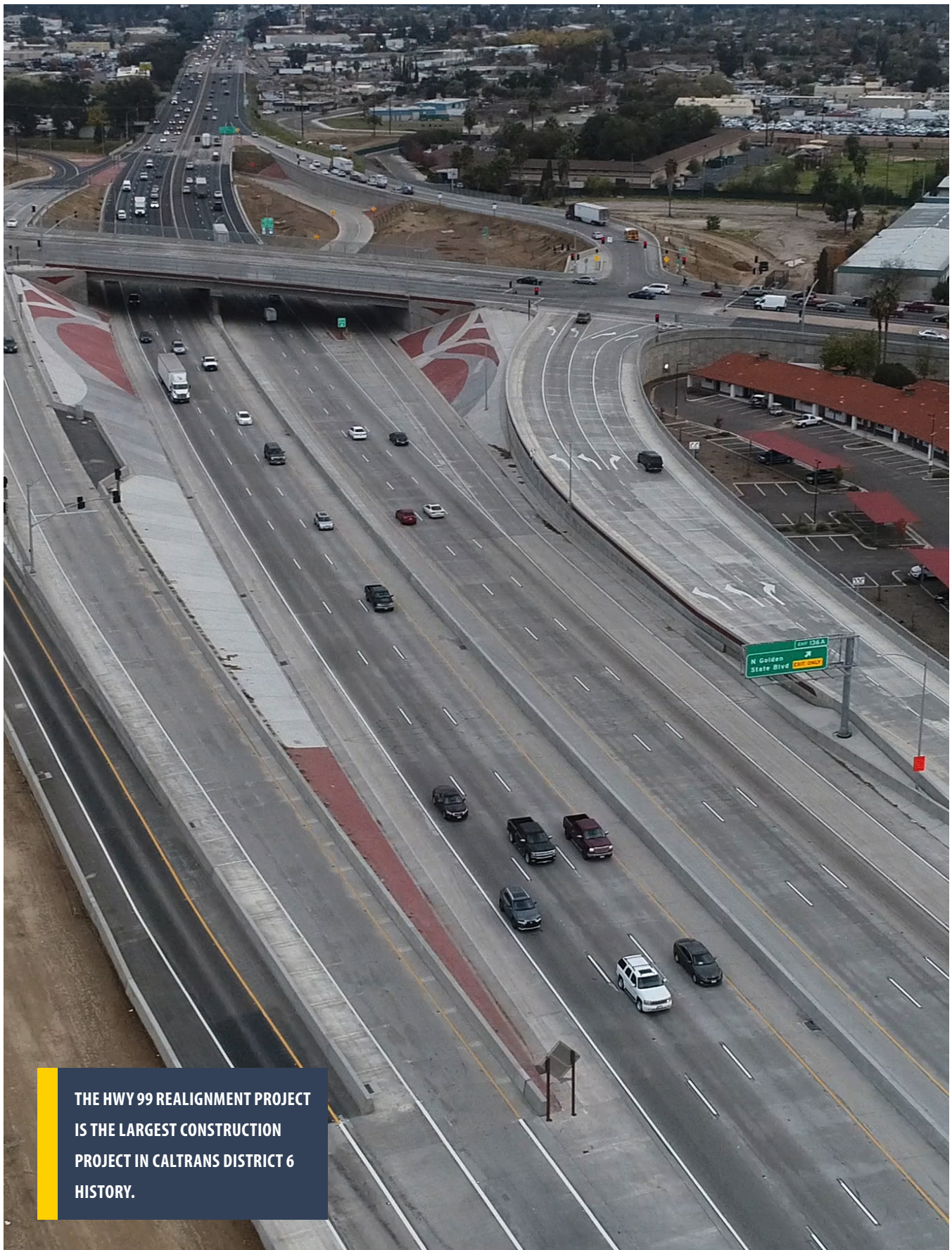
Work intensified in the Central Valley after the 2017 Project Update Report was published. The three Construction Packages (CP 1, CP 2-3 and CP 4) advanced on final design, and the Authority made an overall investment of \$3.4 billion through January 31, 2019, on construction related activities in the Central Valley, per March 2019 Capital Outlay report.

Bridges, viaducts and grade separations are now visible at multiple locations, with three major structures completed—the Cottonwood Creek Bridge, the Fresno River Bridge and the Tuolumne Street Bridge, which opened to traffic in August 2017.

The Authority also worked with local governments to prepare for future high-speed rail stations. Several cities in the Central Valley finished Station Area Plans that support local and regional planning efforts required by the state's Sustainable Communities and Climate Protection Act (SB 375).



KINGS COUNTY



**THE HWY 99 REALIGNMENT PROJECT
IS THE LARGEST CONSTRUCTION
PROJECT IN CALTRANS DISTRICT 6
HISTORY.**

Central Valley Regional Overview

The Central Valley is home to the Merced-Fresno-Bakersfield line and contains the first construction on the initial 119 miles.

Project Sections

The Central Valley contains two project sections. These both have cleared initial state and federal environmental approvals for initial construction currently underway.

Merced to Fresno

The Merced to Fresno Project Section, where the Central Valley Wye is located, generally parallels State Route 99 through the northern stretch of the San Joaquin Valley from the city of Merced to the city of Fresno. At the City of Chowchilla, the Central Valley Wye will serve as the junction for the high-speed rail system connecting San José to Fresno, San José to Merced, and Merced to Fresno. These connections allow travelers to reach destinations in the direction of San Francisco, Sacramento, and Los Angeles.

Fresno to Bakersfield

The Fresno to Bakersfield project section is a critical link connecting to the Merced to Fresno and Bay Area project sections to the north and the Bakersfield to Palmdale and Los Angeles project sections to the south. The Locally Generated Alternative is a 23-mile section of this segment located between the cities of Shafter and Bakersfield that defined an alternative alignment in cooperation with the City of Bakersfield, the City of Shafter, and Kern County.

Stations

The Central Valley includes four high-speed rail stations for the interim service.

Merced

The Merced station is located adjacent to State Route 99 and the Union Pacific Railroad line on Martin Luther King Jr. Way/Highway 59 and the State Route 99 interchange. The station serves downtown Merced, UC Merced, Merced County and the upper Central Valley.

Fresno

The City of Fresno completed the Station District Master Plan. The Master Plan is for the 200-acre area within an approximately five-minute walk from the future high-speed rail station. The city's goal for the Master Plan is to provide an implementable vision for downtown revitalization that capitalizes on the high-speed rail system investment.

Kings/Tulare

The Tulare County Association of Governments' (TCAG) Board of Directors approved the Cross Valley Corridor Plan in June 2018 that will serve as a vision plan to improve transportation connections and guide future development of the Central San Joaquin Valley. The plan focuses on an existing rail corridor between the cities of Huron and Porterville, with direct and convenient access to the Kings/Tulare high-speed rail station.

Bakersfield

The Bakersfield City Council approved in May 2018 the "Making Downtown Bakersfield" Station Area Vision Plan and Environmental Impact Report that will serve as a plan to continue revitalization efforts and guide future development of downtown Bakersfield.



Major Accomplishments

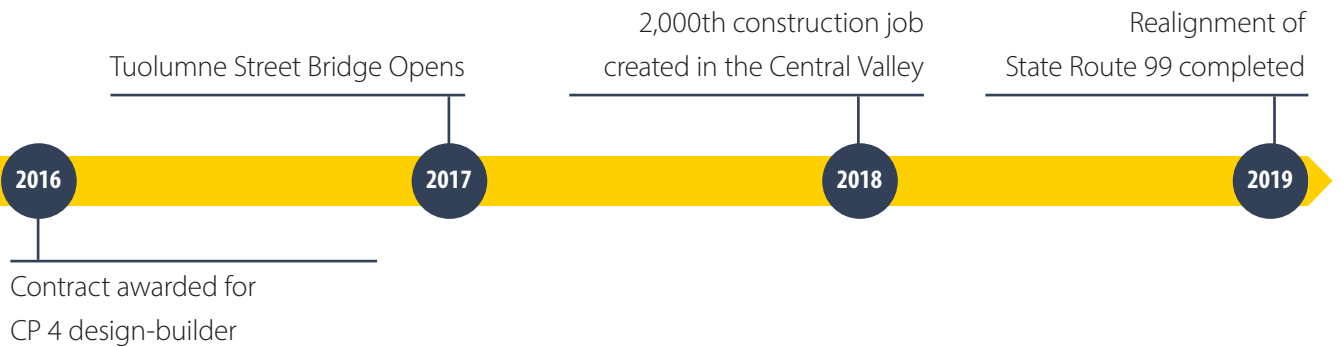
Work intensified in the Central Valley after the 2017 Project Update Report was published. The three Construction Packages (CP 1, CP 2-3 and CP 4) advanced on final design, and the Authority made an overall investment of \$3.4 billion through January 31, 2019, on construction related activities in the Central Valley.

Bridges, viaducts and grade separations are now visible at multiple locations, with three major structures completed—the Cottonwood Creek Bridge, the Fresno River Bridge and the Tuolumne Street Bridge, which opened to traffic in August 2017.

The Authority also worked with local governments to prepare for future high-speed rail stations. Several cities in the Central Valley finished Station Area Plans that support local and regional planning efforts required by the state's Sustainable Communities and Climate Protection Act (SB 375).

Construction is advancing on over 119 miles in the Central Valley, from Madera to north of Bakersfield, with more than a dozen active construction sites in the construction packages:

- Under Caltrans' oversight, the realignment of State Route 99 (SR 99) in Fresno to make room for high-speed rail was completed February 2019;



- In May 2018, the Authority achieved a major milestone – the creation of more than 2,000 construction jobs since the start of the high-speed rail project. Fast forward to the beginning of 2019, and 2,573 construction jobs have been created in the Central Valley; and
- The first significant construction activity in CP 4 started at the Garces Highway Viaduct in early 2018.

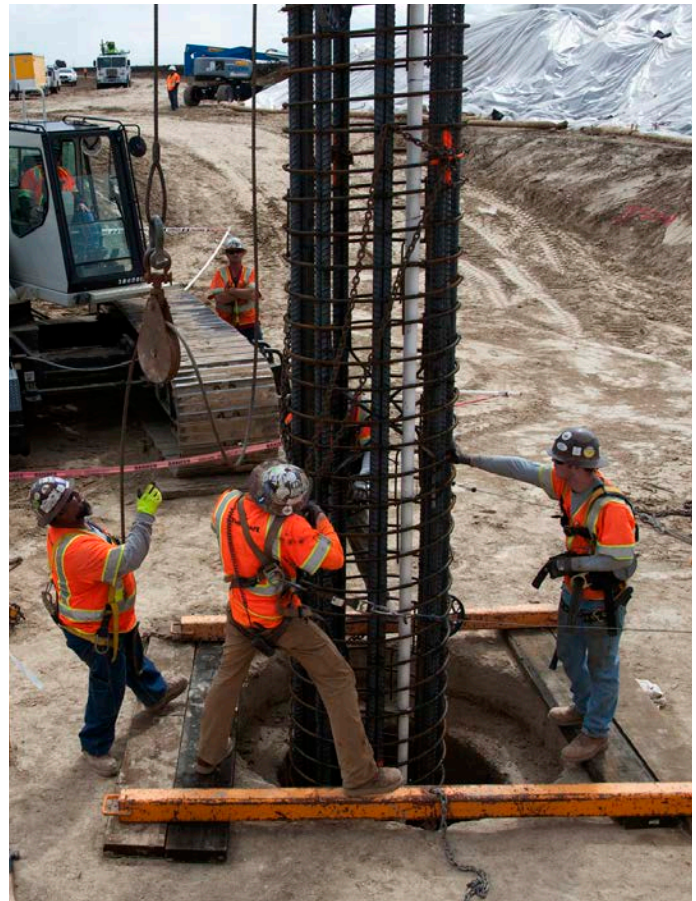


PHOTO: GARCES HIGHWAY VIADUCT (KERN COUNTY) CONSTRUCTION UNDERWAY

TABLE 7.6: PRE-CONSTRUCTION PHASE BUDGETS CONTRACT AS OF 1/31/2019 (DOLLARS IN MILLIONS)

Project Section	Contract Start Date	Board Authorization for Amendment	Current Contract Completion	Current Contract Value	Projected Cost at Completion	Expenditures
Merced – Fresno Central Valley Wye (Parsons Transportation Group)	December 2008	May 2018	June 2019	\$80	\$80	\$78
Merced – Fresno (AE-COM)	February 2007	May 2013	Completed	\$50	\$50	\$50
Fresno Bakersfield (URS-HMM-Arup/JV)	February 2007	April 2013	Completed	\$118	\$118	\$118
Fresno – Bakersfield Locally Generated Alternative (T.Y.Lin)	February 2014	May 2018	January 2021	\$19	\$19	\$17

Milestones Achieved

Legislative Requirements: This section covers statutory requirement (d) Expenditures to date, by segment or contract, for all project phase costs.

Over the last year, construction on CP 1 continued to increase as design progressed for major structures, and right-of-way, utility and other agreements were completed. Over the next year, CP 2-3 and CP 4 will also expand construction activities and break ground on several overcrossings and viaducts between Fresno and Kern counties.

Table 7.6 summarizes the costs by major contract for the Central Valley. Two contracts related to earlier environmental work are complete and closed out. The remaining contracts relate to project sections within the Central Valley and will conclude with the completion of the environmental record of decision for each segment.

Bakersfield Supplemental Environmental Document

The Authority's Board of Directors certified the CEQA Final Supplemental Environmental Impact Report (Final Supplemental EIR) for the Fresno to Bakersfield Project Section in October 2018 and approved a high-speed rail alignment between Poplar Avenue in Kern County and the F Street station location in downtown Bakersfield. This allows the Authority to take additional steps toward advancing major work on the project.

The Final Supplemental EIR evaluates what is known as the Locally Generated Alternative, which extends from Shafter east toward State Route 99, then southward into Bakersfield, ending at a station location on F Street in downtown Bakersfield. The document compares the Locally Generated Alternative to the alignment in the area previously studied in 2014.

TABLE 7.7: CENTRAL VALLEY CONSTRUCTION COST BREAKDOWN AS OF 1/31/2019³ (DOLLARS IN MILLIONS)

Contract	Original Contract Value	Original Contract Value + Provisional Sums	Approved Change Orders	Current Contract Value	Board of Directors Approved Contingency	Current Contingency Balance	Expenditures
DB Services for CP 1 (Tutor Perini/ Zachry/ Parsons) Executed 8/16/2013	\$970	\$1,023	\$526 ¹	\$1,549	\$160	\$36	\$912
Construction Services for SR99 (Caltrans) Executed 2/19/2013	\$226	\$226	\$64	\$290 ²	\$9	\$1	\$259
DB Services for CP 2-3 (Dragados/Flatiron) Executed 6/10/2015	\$1,205	\$1,365	\$80	\$1,445	\$261	\$172	\$637
DB Services for CP 4 (California Rail Builders) Executed 2/29/2016	\$337	\$444	\$4	\$448	\$62	\$55	\$119

1 - The executed change order amount of \$526 million includes \$153 million for the Madera Extension, \$159 million for excluded third party budget (\$112 million for future costs and \$47 million for executed change orders), and \$214 million for various change orders from contingency.

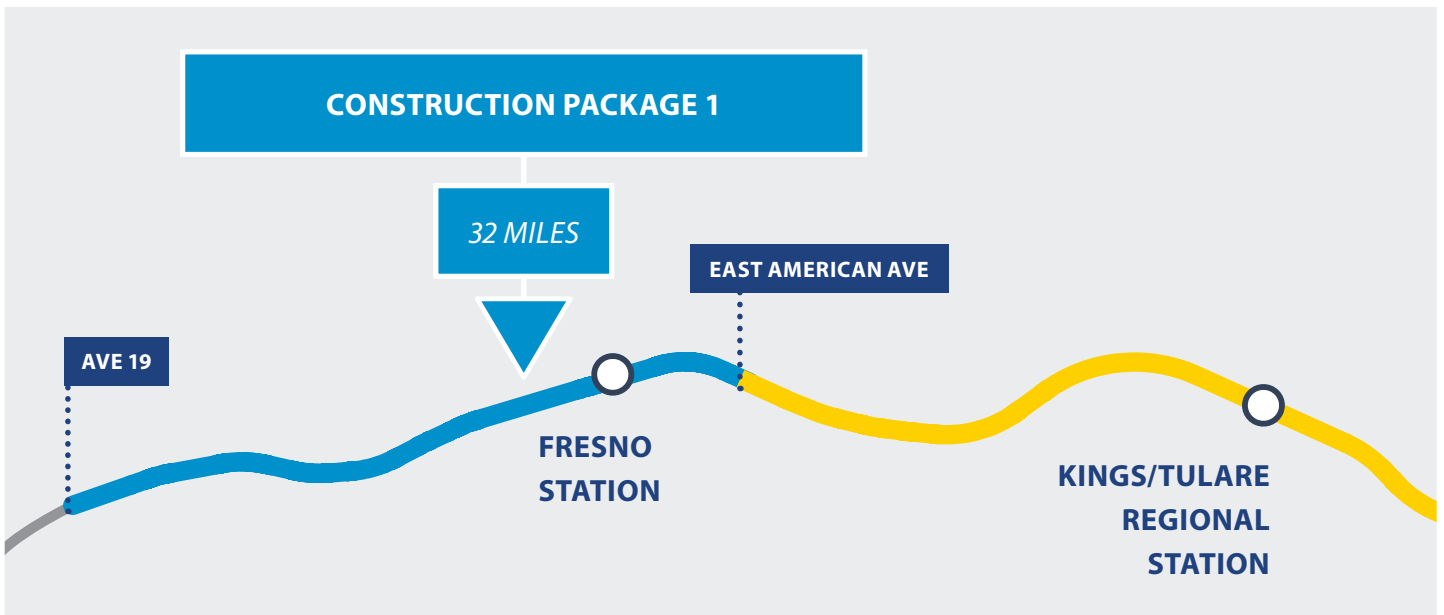
2 - March 2018 Board action increased SR99 contract by \$29.2 million. The total amount for the inter-agency agreement with the California Department of Transportation (Caltrans) HSR12-06 is in the amount of \$290,100,000"

3 - Source of data: March 2019 Monthly Status Reports: www.hsr.ca.gov/Board/monthly_fa_committee_meeting.html
Expenditures to date are based on approved invoices.

Table 7.7 shows the current breakdown of costs for the four Central Valley construction contracts that have been executed to date; the three design-build construction packages and the State Route 99 (SR 99) Realignment Project inter-agency agreement executed with the California Department of Transportation (Caltrans). The information provided shows the original contract execution date and values and the status of each contract as of January 31, 2019.

Construction Package Milestones

The next two pages present a graphical look at some of the work that is being done in the three Construction Packages. The Authority's efforts to date have focused on Construction Package 1, but work in Construction Package 2-3 will ramp up in 2019.



CP 2-3 KENT AVENUE



CP 2-3 KANSAS AVENUE



CP 4 PRECONSTRUCTION GEOTECH



CONSTRUCTION PACKAGE 2-3

65 MILES

CONSTRUCTION PACKAGE 4

22 MILES

ONE MILE NORTH
OF COUNTY LINE

POPLAR AVE

BAKERSFIELD
STATION



CP 2-3 ROAD RESURFACING



CP 4 POND ROAD



CP 4 GARCES VIADUCT

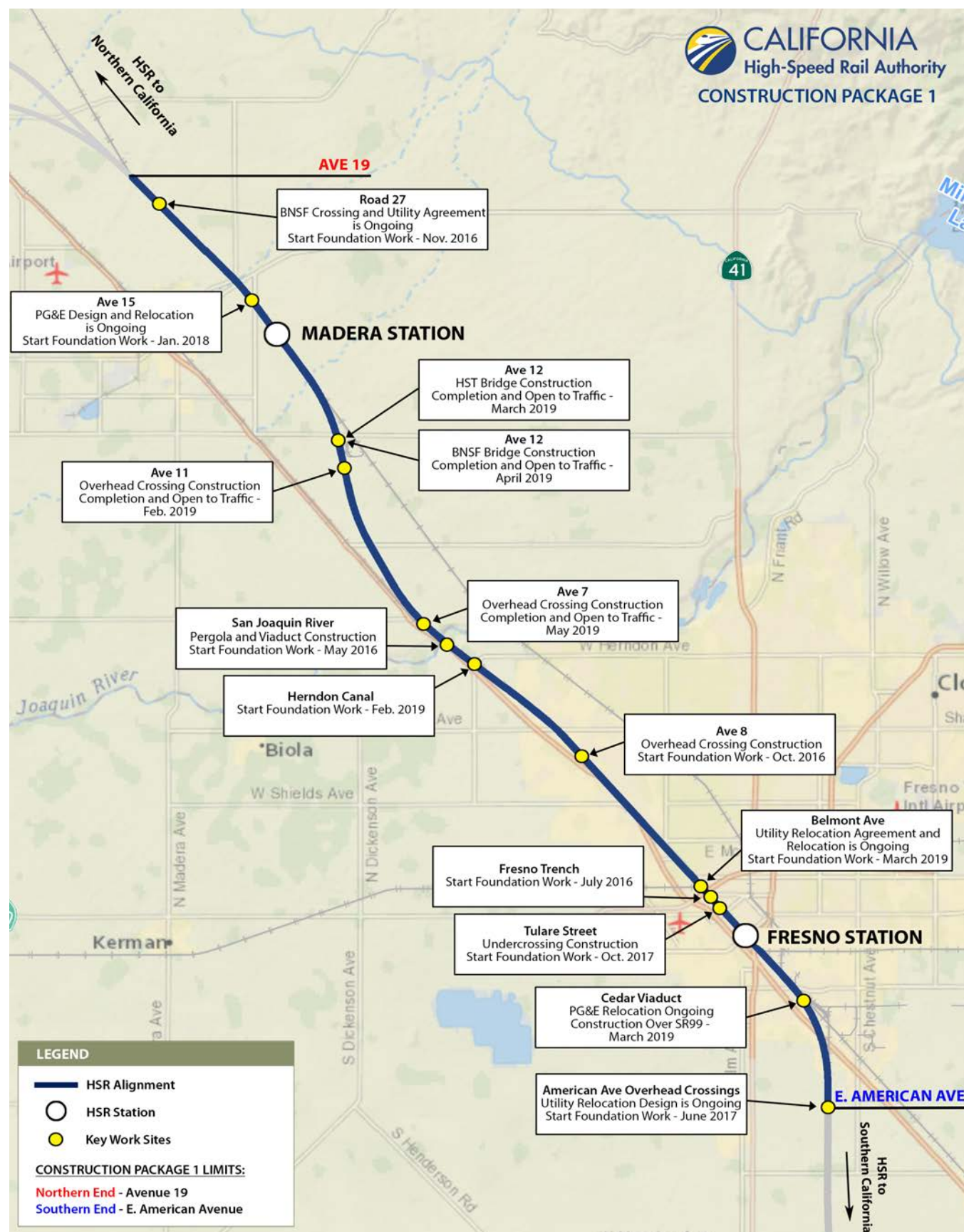


EXHIBIT 7.7: CP 1 MAP OF ACTIVE CONSTRUCTION SITES

Construction Package 1

The CP 1 construction area extends approximately 32 miles between Avenue 19 in Madera County to East American Avenue in Fresno County. CP 1 includes 12 grade separations, four viaducts, a trench that will take trains under State Route 180, a major river crossing over the San Joaquin River and a pergola structure spanning the Union Pacific Railroad in north Fresno.

Exhibit 7.7 illustrates the current work in CP 1, highlighting some key activities.



Active Construction Sites

- Avenue 19 Overpass
- Road 27 Overpass
- Avenues 7,8,11,12, and 15 Overpasses
- San Joaquin River Viaduct/Pergola
- Golden State Boulevard Realignment
- Fresno Trench
- Tulare Street Underpass
- Cedar Viaduct
- American Avenue Overpass



San Joaquin River Viaduct

Construction of this massive viaduct began in the summer of 2016, as joint venture design-builder Tutor Perini Zachry Parsons began work on what will be the largest structure on CP 1. Rising up alongside State Route 99 in northern Fresno County, the San Joaquin River Viaduct currently has an estimated completion date of May 2019.

A total of 198 girders, each 121 feet long and weighing approximately 156,000 lbs. were placed to create the pergola section of the viaduct, that will bridge an existing Union Pacific Railroad freight track, crossing high-speed trains from one side of the tracks to the other, and then back to grade.

When complete, the San Joaquin River Viaduct will be approximately 4,800 feet in length, crossing more than 100 feet above the river, and act as the high-speed rail project's arched gateway into the City of Fresno.

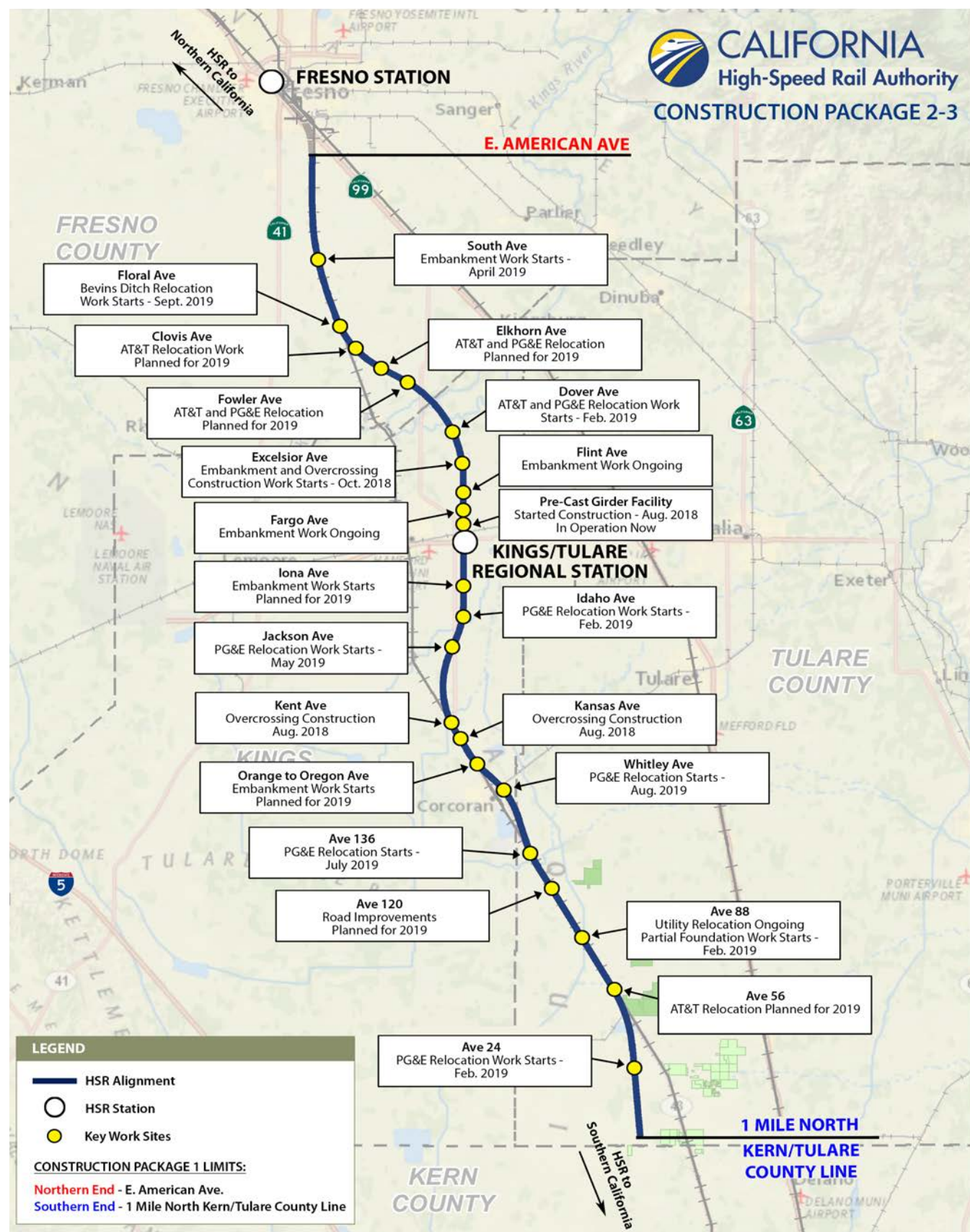


EXHIBIT 7.8: CP 2-3 MAP OF KEY WORK

Construction Package 2-3

The CP 2-3 construction area extends approximately 65 miles from the terminus of CP 1 at East American Avenue in Fresno to one-mile north of the Tulare-Kern County line. CP 2-3 will include approximately 36 grade separations in the counties of Fresno, Tulare, and Kings, including viaducts underpasses and overpasses.

Exhibit 7.8 illustrates the current work in CP 2-3, highlighting some key activities.



Active Construction Sites

- Iona Avenue Embankment Construction
- Kent Avenue Overpass
- Kansas Avenue Overpass
- Orange to Oregon Embankment Construction
- Avenue 120 Road Overlay
- Avenue 88 Embankment Construction

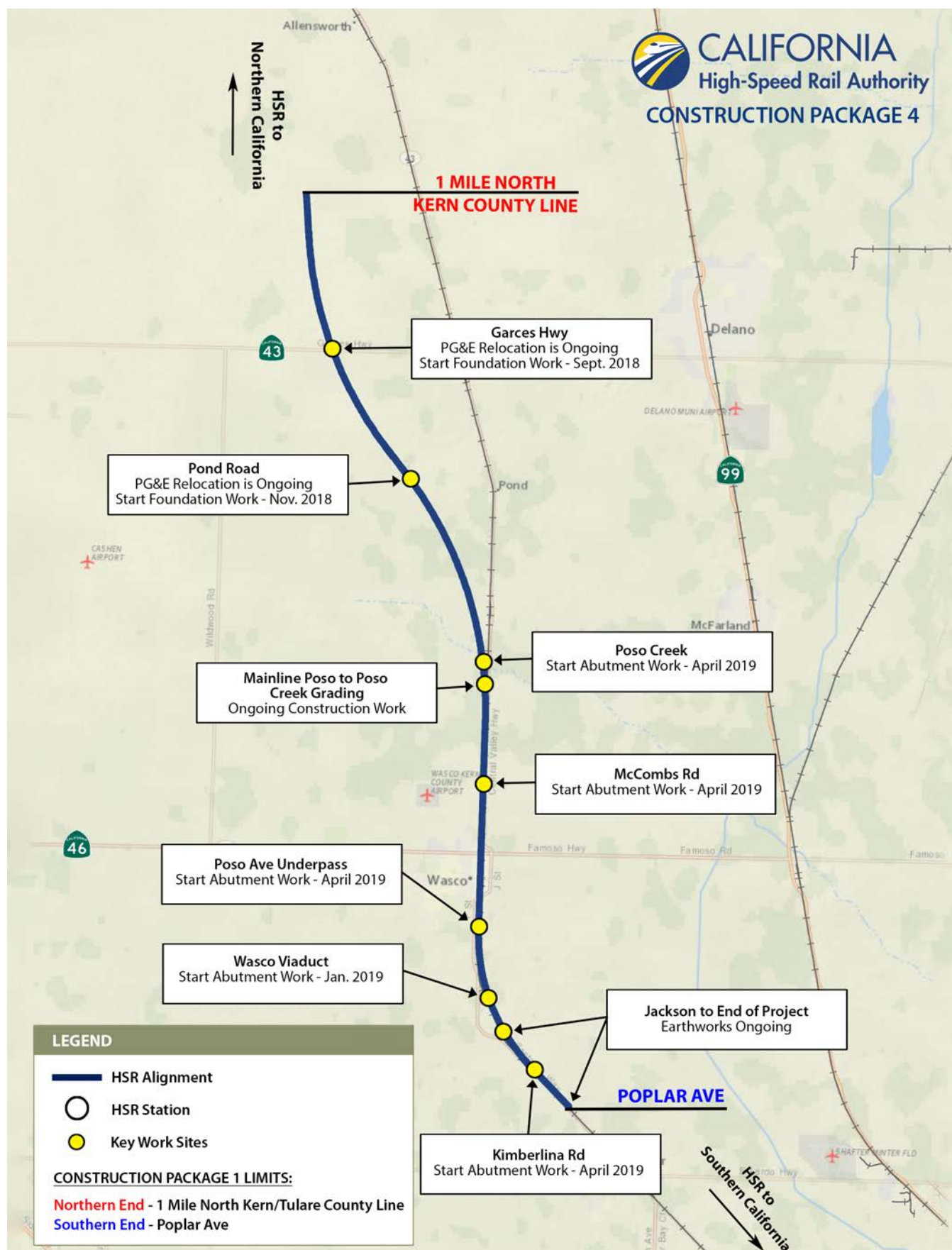


Pre-Cast Manufacturing

In August, the Authority and design-builder Dragados-Flatiron Joint Venture (DFJV) opened a new pre-cast girder manufacturing facility near Grangeville Avenue and State Route 43 in Kings County. The facility will produce as many as 1,350 girders needed for 36 bridges in CP 2-3.

DFJV is launching in-house girder production to meet the project's schedule and to have direct control of the quality and production schedule of girders and their shipment to various construction sites along CP 2-3.

Casting is 600 feet long and will produce up to eight girders per day. Two types of girders are being manufactured: California Wide Flange and High-Speed Rail Tub Girders. While in operation, 30-50 workers from local union halls will be employed full time. The precast plant is made so that it can be dismantled once this phase of work is completed so DFJV can reuse the components for other purposes.

**EXHIBIT 7.9: CP 4 MAP OF KEY WORK**

Construction Package 4

CP 4 comprises a 22-mile stretch between one-mile north of the Tulare-Kern County Line at the terminus of CP 2-3 and Poplar Avenue just north of Shafter. CP 4 includes construction of at-grade, retained fill and aerial sections of the alignment and the relocation of four miles of existing Burlington Northern Santa Fe track.

Exhibit 7.9 shows the current work sites in CP 4, highlighting some key activities.



Active Construction Sites

- Garces Highway Structure
- Pond Road Viaduct



Garces Avenue Construction

In March, the first structure for Construction Package 4 broke ground in Kern County. Design-builder California Rail Builders began foundation work for a bridge that will carry high-speed trains over Garces Highway.

Drill rigs and heavy machinery were mobilized to the site at Garces Highway near Scofield Avenue where workers drilled shafts 80-feet into the ground. Rebar cages were also lowered into the shafts and covered with concrete.

When complete, the Garces Bridge will be approximately 102-feet in length, 52-feet wide, with abutments at each end of the structure, and vertical clearance of just over 15 feet. Garces Highway will remain at-grade, and Scofield Avenue will be realigned to become parallel to the high-speed rail alignment.

Stations

Station area planning involves local jurisdictions/ joint powers, local governments, regional and local transit providers, and other interested parties that establish, relocate and provide transportation in their region. Planning elements include parking strategies, streetscapes that promote walking, biking and transit use, finance plans, zoning for residential and commercial activities, and station place-making. Every station will be unique for each region; therefore, aligning community and high-speed operational needs to the goals for each station is a major collaborative effort.

The Authority worked with local governments over the last two years to prepare for future high-speed rail stations. In partnership with the Federal Railroad

Administration, we dedicated funding to support station cities in completing Station Area Plans (SAP) that are consistent with and support local and regional planning efforts required by SB 375 and our Station Area Development Policies.

These SAP agreements support working with station jurisdictions and other service providers to promote station access improvements, economic development opportunities and sustainable, district-scale development. These efforts include working with regional and local transit providers to enhance multi-modal connectivity to high-speed rail stations and surrounding transportation improvements.

Table 7.8 summarizes the key milestones for completing existing agreements, and notes key partners involved in providing the necessary input.

TABLE 7.8: STATION AREA PLANNING DELIVERABLES - CENTRAL VALLEY REGION

Station Area Jurisdiction	Description	Partners	Completion Date
City of Bakersfield	Station Area Vision Plan	Kern Council of Governments	Complete
City of Merced	Station area vision plan	Merced County, MCAG	TBD
City of Fresno	Station area master plan	Fresno COG	Complete
Hanford, Visalia, Porterville and others	Transportation connectivity and implementation plan	Tulare Council of Governments (Kings/Tulare Station)	Complete

City of Fresno

The City of Fresno's plans, policies and environmental documents that inform station area planning work include the 2035 General Plan and Master Environmental Impact Report, the Downtown Development Code (DDC), the Downtown Neighborhood Community Plan (DNCP), the Fulton Corridor Specific Plan (FCSP) and an Environmental Impact Report.

The City of Fresno's revitalization goals in the approved plans include:

- Re-establishing downtown as the heart of Fresno by attracting investment, businesses and entrepreneurship, creating and retaining jobs, and revitalizing neighborhoods;
- Increasing provision of housing and related amenities in downtown; and
- Creating a safe, bikeable, walkable and pedestrian-friendly downtown.

City of Merced

Station area planning work has been on hold pending state rail plan coordination. Future station coordination and collaboration will focus on the integration of high-speed rail with other rail providers in Merced in keeping with the state rail plan objectives. This work is expected to resume in 2019.

City of Bakersfield

The Station Area Vision Plan was created to "illustrate the Community's vision for revitalization of Downtown Bakersfield and provide a blueprint for future decisions." The Vision Plan's research shows that community building, accessibility and sustainability planning can lead to economic development, while making Bakersfield high-speed rail ready. The Vision Plan includes a list of 11 implementation goals to be advanced in the future and illustrates that Bakersfield has accomplished a critical first step toward achieving station area planning goals.

Tulare County Association of Governments

The TCAG completed plans related to station access in 2018. The corridor planning work and coordination with the high-speed rail station resulted in the completion of the Cross-Valley Corridor Plan. Implementation of the plan is anticipated to occur in three phases and be coordinated with the Authority's station plans as the program advances.

The Authority will continue to coordinate with the agencies involved in the planning work, and implementation of the Cross-Valley Corridor rail plan is anticipated to occur in three phases.



**THE 4,700-FOOT SAN JOAQUIN
RIVER VIADUCT WILL SPAN THE SAN
JOAQUIN RIVER IN NORTH FRESNO.**

Milestones to Follow

Over the next two years, the Authority will oversee significant expansion of construction in all construction packages and will continue planning coordination to relocate utilities and complete right of way acquisition.

Construction Packages

1, 2-3 and 4

From 2016-2018, 48 percent of the right of way needed through the Central Valley was acquired. By the end of 2019, the Authority will complete acquisition of all parcels identified by the contractors as needed for construction packages 1 through 4. To date, a total of 1,501 parcels have been acquired by the Authority, with 315 parcels remaining.

In addition, several third-party agreements are in place to relocate third party utility owners' facilities including water and sewer systems, gas and electric lines, irrigation casings and communication lines

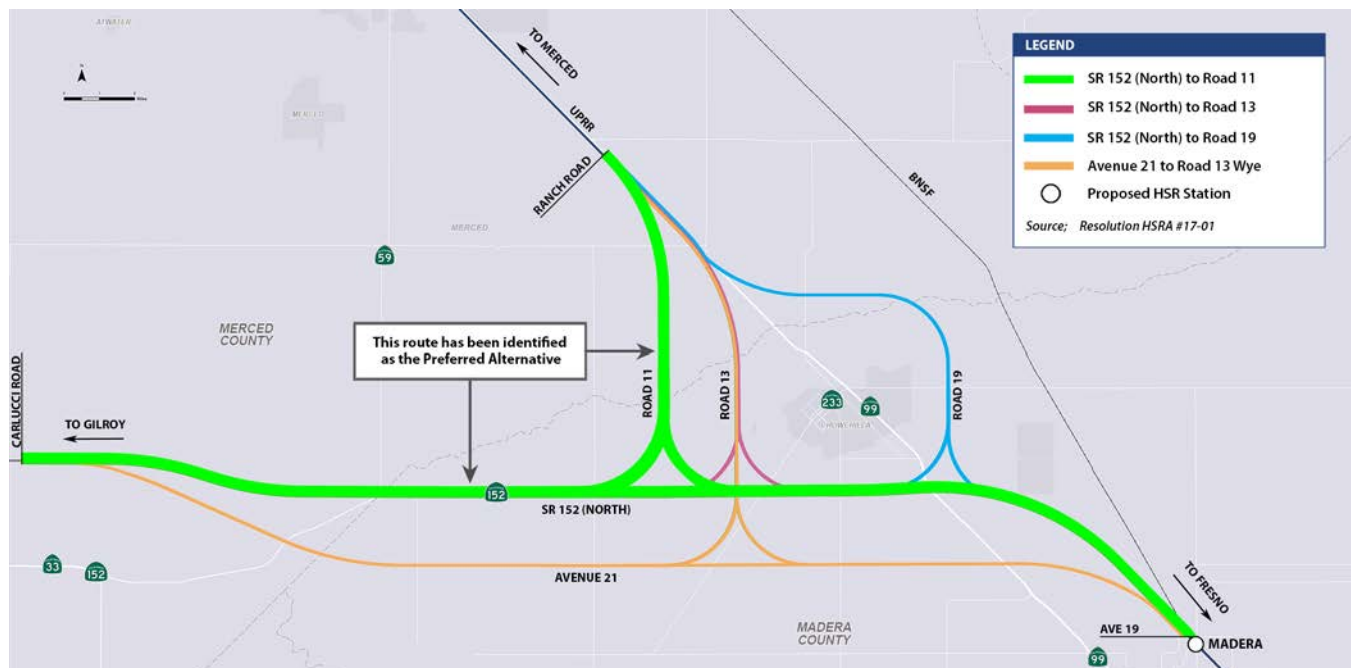
throughout the Central Valley. The Authority and its contractors are coordinating with numerous third parties to complete relocations.

Environmental Schedule

The Authority will publish in April the CEQA Central Valley Wye Draft Supplemental Environmental Impact Report/Environmental Impact Statement (Draft Supplemental EIR/EIS), which is a supplement to the Merced to Fresno Section Final Environmental Impact Report/Environmental Impact Statement.

The Draft Supplemental EIR/EIS evaluates the impacts and benefits of implementing a Central Valley Wye connection between the cities of Merced and Madera and is based on additional project planning and engineering that has occurred over the last several years. The four alternatives shown in **Exhibit 7.10** were developed through extensive local and agency involvement, stakeholder meetings, and public and agency comments, and were subjected to a thorough screening process that considered the alternatives' impacts on the social, natural and built environment.

EXHIBIT 7.10: CENTRAL VALLEY WYE



The four alternatives studied and evaluated in the Draft Supplemental EIR/EIS are:

- State Route 152 (North) to Road 13 Wye Alternative;
- State Route 152 (North) to Road 19 Wye Alternative;
- Avenue 21 to Road 13 Wye Alternative; and
- State Route 152 (North) to Road 11 Wye Alternative.

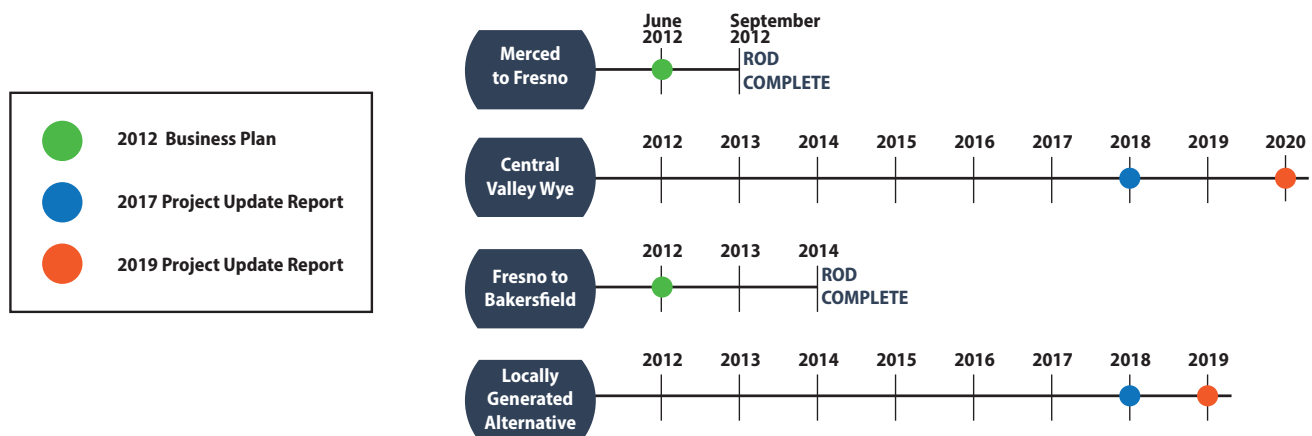
These Central Valley Wye alternatives would create the high-speed rail connection between the San José to Merced Section to the west and the north-south

Merced to Fresno Section to the east. The alternatives were developed through extensive local and agency involvement, stakeholder meetings, and public and agency comments, and were subjected to a thorough screening process which considered the alternatives' impacts on the social, natural, and built environment.

The Draft Supplemental EIR/EIS will be made available to the public for a 45-day review and comment period in accordance with the California Environmental Quality Act and the National Environmental Policy Act.

Exhibit 7.11 shows the changes in the estimates for completing Records of Decision for the relevant project sections. Each estimate was discussed in the corresponding report identified in the legend.

EXHIBIT 7.11: ESTIMATED RECORD OF DECISION (ROD) COMPLETION TIMELINE



The environmental approvals for both documents will require federal approval. This would involve issuing these documents under the National Environmental Policy Act (NEPA) and ultimate project approval and issuing a Record of Decision under NEPA. This is pending NEPA assignment or federal re-engagement action.

Stations

The Authority has worked with local governments over the last several years to prepare for future high-speed rail stations. The Authority, in partnership with the FRA, dedicated funding to support station cities in completing station area plans that are consistent with and support local and regional planning efforts required by SB 375 and the Authority's Station Area Development Policies.

City of Bakersfield

In the next fiscal year, the Authority will continue to coordinate and collaborate with Bakersfield to advance the city's top-priority implementation strategies.

Tulare County Association of Governments

Planning work will continue around the Kings/Tulare Station in the future. The planning work includes regional/corridor planning and a community engagement to understand how the project would potentially link to public transit in the nearby cities, as shown in **Figure 7.12** below.

Remaining deliverables from the TCAG include:

- A revised work plan describing outstanding implementation planning work;
- Technical Advisory Committee meetings, including materials, agendas, exhibits and presentations, on the Implementation Plan;
- A Draft Implementation Plan and detailed project list (toolkit matrix);
- A funding analysis update;
- Responses to comments regarding site selection for Farmersville and Lindsay; and
- A Final Draft Implementation Plan (information gathering chapter/report, and technical chapters, conceptual design, implementation and funding plan)

EXHIBIT 7.12: CROSS VALLEY CORRIDOR PLAN STUDY AREA





EXHIBIT 7.13: HIGH-SPEED RAIL PROJECT SECTION MAP - SOUTHERN CALIFORNIA

Southern California

Planning for network integration and sustainable development at stations

The Authority worked with partner agencies, corridor cities, stakeholders and community members, and local and state leaders to advance environmental clearance of the four Phase 1 project sections in Southern California. The Authority made significant progress, and, in late 2018, the Authority's Board of Directors approved preferred alternatives for all the project sections.

The Authority also made important progress on bookend and connectivity projects. In early 2018, the joint funding agreement for the Rosecrans/Marquardt Grade Separation Project was approved. The Authority also made significant contributions to regional connectivity projects that will improve regional mobility.



LOS ANGELES

Southern California Regional Overview

Southern California is home to the high-speed rail system's southern terminus in Los Angeles/Anaheim.

Project Sections

The Southern California region contains four project sections.

Bakersfield to Palmdale

The Bakersfield to Palmdale Project Section connects the Central Valley to the Antelope Valley, closing the existing passenger rail gap over the Tehachapi Mountains. The approximately 80-mile corridor travels through or near the cities of Edison, Tehachapi, Rosamond, Lancaster and Palmdale with proposed stations in Bakersfield and at the Palmdale Transportation Center.

Palmdale to Burbank

The Palmdale to Burbank Project Section connects the Antelope Valley to the San Fernando Valley and will bring high-speed rail service to the urban Los Angeles area. This project section will connect two key population centers in Los Angeles County with multimodal transportation hubs at the Palmdale Transportation Center and at the Hollywood Burbank Airport

Burbank to Los Angeles

The Burbank to Los Angeles Project Section connects two key multimodal transportation hubs, the Hollywood Burbank Airport and Los Angeles Union Station (LAUS), providing an additional link between

Downtown Los Angeles, the San Fernando Valley and the rest of the state. The approximately 14-mile project section proposes to utilize the existing railroad right-of-way to the greatest extent possible, as it travels through the cities of Burbank, Glendale and Los Angeles.

Los Angeles to Anaheim

The Los Angeles to Anaheim Project Section connects Los Angeles and Orange counties by traveling from Los Angeles Union Station (LAUS) to the Anaheim Regional Transportation Intermodal Center (ARTIC) using the existing Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor. The approximately 30-mile corridor travels through the cities of Los Angeles, Vernon, Commerce, Bell, Montebello, Pico Rivera, Norwalk, Santa Fe Springs, La Mirada, Buena Park, Fullerton and Anaheim as well as portions of unincorporated Los Angeles County. It also supports the national and regional economy by facilitating cargo movements in and out of the two busiest Ports in the country—Los Angeles and Long Beach.

Stations

The Southern California region includes five high-speed rail stations.

Palmdale Multimodal Station

The Palmdale Transportation Center (PTC) is a multimodal transportation center featuring a Metrolink rail station, a local bus hub and commuter buses. The Palmdale location is predicted to be the hub of future north-south and east-west travel with planned connections to Northern and Southern California and possible future connection to Las Vegas via the High Desert Corridor. Virgin Trains USA is

currently pursuing construction and future operations between Victorville and Las Vegas. Future high-speed services between Victorville and Palmdale would be made possible by the construction of the High Desert Corridor Joint Powers Authority's proposed rail corridor.

Burbank Multimodal Station

The Burbank Multimodal station will be located adjacent to the Hollywood Burbank Airport and between two Metrolink stations; the Metrolink Hollywood Way Station to the north and the Burbank Airport Station to the south, which also serves as a LOSSAN/Surfliner station. The Burbank location is predicted to be a key transportation hub for the San Fernando Valley with national reach through connections with the Hollywood Burbank Airport and major inland and coastal north-south connections across the state.

Norwalk/Santa Fe Springs and Fullerton Multimodal Stations

Norwalk/Santa Fe Springs and Fullerton Metrolink and/or Metrolink Amtrak stations provide key connectivity points for Southern California. The stations will be preserved and enhanced as part of the high-speed rail project to include the ability for high-speed rail stops, as identified in the State Rail Plan.

Los Angeles Union Station

LAUS serves as a major regional transit hub for Southern California, supporting Amtrak, LOSSAN, Metrolink, subway, light rail, multiple bus services and a regional bike hub. High-speed rail will integrate services into this station, and it is predicted that LAUS will become one of the most frequently used high-speed rail stations in the Phase 1 system.

Anaheim Multimodal Station

The Anaheim Regional Transportation Intermodal Center (ARTIC) was opened in 2014 and designed to accommodate high-speed rail services. ARTIC is a multimodal transportation center featuring a Metrolink/LOSSAN rail station, a local bus hub and commuter buses. It is the first contemporary and fully operational station in the state to serve such a purpose. High-speed rail will integrate services into this station, and it will become the southern terminus of the Phase 1 system.

Major Accomplishments

Legislative Requirements: This section covers statutory requirement (d) Expenditures to date, by segment or contract, for all project phase costs.

The Authority continues to work with regional rail providers to identify, plan and construct projects that will provide early benefits while laying the foundation for future high-speed rail operations. Over the past two years, these efforts resulted in:

- Completion of the SB 1029 bookend project agreement (May 2018) for the Rosecrans Marquardt Grade Separation Project;
- Investment of 80 percent of the connectivity dollars in regionally significant connectivity, mobility, and safety projects; and
- Identification of a state's preferred alternative for each of the four Phase 1 project sections.
- Commitment of \$423 million in bookend funds to the Link US project.



PHOTO: STATION AREA PLANNING PUBLIC OUTREACH MEETING IN SOUTHERN CALIFORNIA.

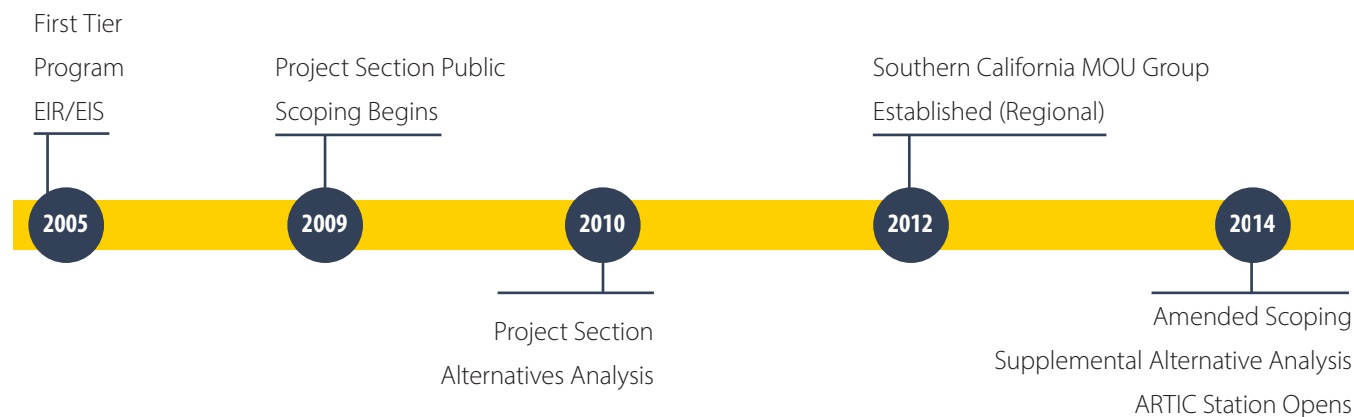
To date, our efforts in supporting Statewide Rail Modernization have also resulted in increased service, and a more robust timetable in the short-term while preserving future high-speed rail service with fewer throw-away costs and right-of-way impacts. Other activities underway include continuing work with the cities of Palmdale, Burbank, Los Angeles, Santa Fe Springs/Norwalk, Fullerton and Anaheim to plan for

network integration and sustainable development at stations and throughout surrounding areas.

Table 7.9 summarizes the costs by major contract for Southern California. Three contracts related to earlier environmental work are complete and closed out. The remaining contracts relate to project sections within the Southern California region and will conclude with the completion of the environmental clearance for each section.

TABLE 7.9: PRE-CONSTRUCTION PHASE BUDGETS BY CONTRACT AS OF 01/31/19 (DOLLARS IN MILLIONS)

Section	Contract Start	Board Authorization for Amendment	Current Contract Completion	Current Contract Value	Projected Cost at Complete	Expenditures
Bakersfield – Palmdale (URS-HMM-Arup/JV)	February 2007	N/A	Completed	\$26	\$26	\$26
Bakersfield – Palmdale (T.Y. Lin)	February 2014	May 2018	January 2021	\$54	\$54	\$42
Palmdale – Los Angeles (HMM-URS-Arup/JV)	December 2006	June 2014	Completed	\$74	\$74	\$74
Palmdale – Burbank (Sener)	April 2015	May 2018	December 2021	\$65	\$65	\$51
Burbank – Los Angeles (STV)	February 2015	May 2018	January 2020	\$29	\$29	\$19
Los Angeles – Anaheim (STV)	December 2006	N/A	Completed	\$50	\$50	\$50
Los Angeles – Anaheim (STV)	February 2015	May 2018	January 2020	\$34	\$34	\$26



Milestones Achieved

Legislative Requirement: This section covers statutory requirement (f) A summary of milestones achieved during the prior two-year period and milestones expected to be reached in the coming two-year period.

Southern California made significant strides in moving forward with environmental documents throughout the region. All four project sections have identified preferred alternatives which are now undergoing final review and community collaboration in the production of draft documents.

Preferred Alternatives Identified

In 2018, the Authority Board of Directors concurred with the Staff Recommended State's Preferred Alternative for each project section. These are the first Phase 1 project sections outside the Central Valley to reach this important milestone. Although identification of a preferred alternative does not represent final approval of alignments and/or station locations, the approval allows the Authority to prepare the administrative draft environmental documents and, thus, move closer to completion of this important milestone.

Environmental Review Alternatives

Identified Geotechnical Drilling Program
Conducted Bakersfield to Palmdale and
Palmdale to Burbank

2016

Committed \$423M
in bookend funds
to Link US Project

2018

Los Angeles Union Station
Draft EIR/EIS Released

2019

2022

Rosecrans Marquardt Grade-Separation
Project Management and Funding Agreement Signed

Completion of ARRA-funded
Phase 1 Environmental Documents

Bakersfield to Palmdale

In October 2018, the Board of Directors concurred with the Staff Recommended State Preferred Alternative. The Draft Environmental Document for this project section is anticipated to be released in summer 2019 and will include a public hearing as well as agency and public comment opportunities.

Palmdale to Burbank

In November 2018, the Board of Directors concurred with the Staff Recommended State Preferred Alternative. The Draft Environmental Document for this project section is anticipated to be released in winter 2019/2020 and will include a public hearing as well as agency and public comment opportunities.

Burbank to Los Angeles

In November 2018, the Board of Directors concurred with the Staff Recommended State Preferred Alternative, known as the Project Alternative (or Build Alternative). The Draft Environmental Document for this project section is anticipated to be released in fall 2019 and will include a public hearing as well as agency and public comment opportunities.

Los Angeles to Anaheim

In November 2018, the Board of Directors concurred with the Staff Recommended State Preferred Alternative. The schedule for release of the Draft Environmental Document for this project section is being revised now to incorporate recent operations modeling results and with the support of local stakeholders.

Bookend Projects Advanced

SB 1029 provides \$500 million for regional rail projects that improve local networks and facilitate high-speed rail travel to Southern California. Status of these two projects is provided in **Table 7.10** on the following page. In May 2018, the Authority finalized a funding agreement for Southern California bookend funds with the Los Angeles County Metropolitan Transportation Authority (Metro) for the Rosecrans Marquardt Grade Separation Project Management and Funding Agreement.

Additional projects were identified at the time the Memorandum of Understanding (MOU) was signed in 2012. These projects have also moved forward initiating over \$1 billion in investment to support advancement of the projects identified in the original discussions in 2012.

Rosecrans/Marquardt Grade Separation Project

The Authority and Metro announced in May 2018 the approval of a joint funding agreement that allocates \$76.7 million in Proposition 1A bond funds toward the Rosecrans Avenue/Marquardt Avenue Grade Separation Project in the City of Santa Fe Springs. This contribution will be matched by other local funding sources to complete the \$155.3 million project.

This project will separate vehicle traffic from rail traffic by constructing an elevated overpass structure

which will greatly improve safety, eliminate delays and improve air quality. The crossing, traversed by about 110 freight and passenger trains and more than 52,000 vehicles per 24-hour period, has been rated by the California Public Utilities Commission as one of the most hazardous grade crossings in California.

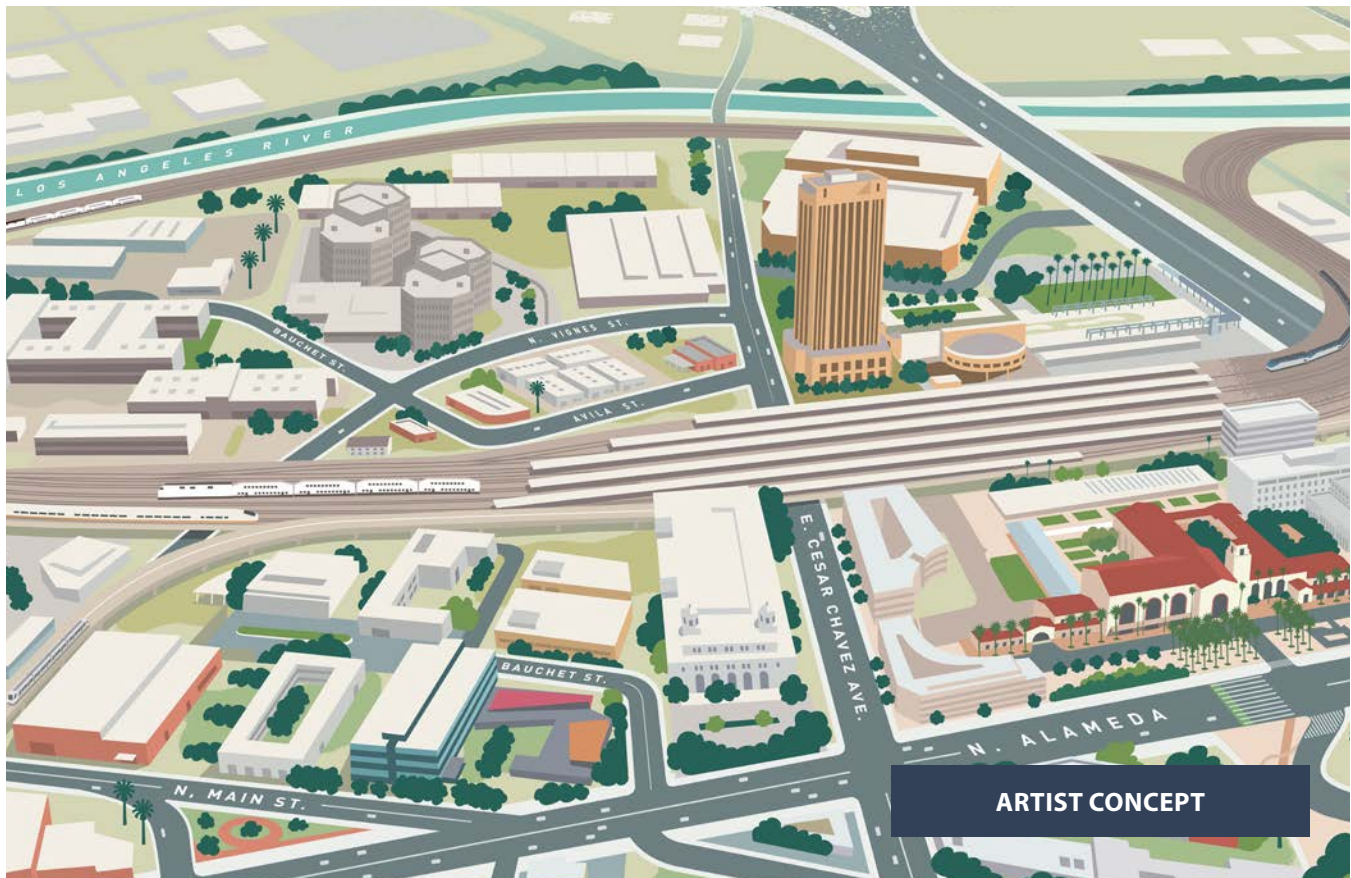
Los Angeles Union Station

The Authority approved up to \$18 million to help fund engineering and technical studies and to environmentally clear improvements to Los Angeles Union Station that accommodate expanded regional and inter-city rail service and high-speed rail trains. In January 2019, the Administrative Draft EIR was released, and a public hearing was held. The EIR approval process is expected to conclude in summer 2019.

The Authority will use the remaining bookend funds for Southern California—\$423 million—to fund construction of the first phase of improvements at LAUS that are described in the document mentioned above. These efforts will result in the development of a transportation facility that cost effectively meets the service needs of all operators, including Metro, Metrolink, LOSSAN, Amtrak, the Authority and other partners.

TABLE 7.10: SOUTHERN CALIFORNIA BOOKEND PROJECTS' FUNDING STATUS AS OF 1/31/19 (DOLLARS IN MILLIONS)

Project Name	Owner/Location	Status	Total Allocation	Expenditures
Rosecrans Marquardt Grade Separation	LA Metro City of Santa Fe Springs/ Los Angeles	All agreements in place Right-of-way acquisition underway Construction anticipated 2021-2023	\$77	\$0
Link US (Phase A Run Through Tracks)	LA Metro/ Los Angeles	Project definition completed Preliminary Agreement Discussions Underway Right-of-way acquisition anticipated 2020 Construction anticipated 2021-2023	\$423	\$0



VISUAL: LINK US PROJECT EXPANDS CAPACITY AND TRANSFORMS LAUS INTO A “RUN-THROUGH” STATION.

Milestones to Follow

Completing the environmental approvals for the Phase 1 system is important because it maximizes the state's ability to prepare accurate cost estimates for future work, identify phasing and funding plans for future work, and swiftly and efficiently advance any segment of the system when resources become available.

Environmental Approvals

The next milestone for Southern California project sections is the release of the Draft Environmental Documents for each of these four project sections as shown in **Table 7.11** on the following page. It is currently anticipated that these documents will be released prior to the Authority submitting the final 2020 Business Plan to the Legislature. It is anticipated that the environmental documents will be completed before the Authority submits the 2021 Project Update Report to the Legislature.

The Authority will also continue to coordinate with infrastructure owners and operators to further develop the concept of blended service with other passenger and freight rail services.

The discussions will include:

- Analyzing ridership and revenue forecasts to ensure that operations will meet statutory requirements;
- Continually assessing the potential for public-private partnerships so private investment can be brought in at the right time to support the schedule and maximize the amount of the investment;

- Working with partners, above and beyond the MOU commitment mentioned above, to grow available funding by bringing together the widest variety of funding sources to complete projects that deliver operational benefits for passenger and freight services sooner;
- Extending concurrent construction south to the Burbank to Anaheim corridor, where investments in network elements such as junctions, storage and maintenance, signaling, and integrated services and ticketing create immediate benefits for freight and passenger service;
- Increasing engagement with agencies across the state to understand and articulate the benefits of investments and better describe how regional priorities contribute to improved air quality, service, safety, capacity, frequency and reliability, and help increase ridership; and
- Completing the station area plans for Palmdale and Burbank.

TABLE 7.11: ENVIRONMENTAL MILESTONES

Project Section	Preferred Alternative Selected	Draft EIR/EIS	Final EIR/EIS and Receive Record of Decision
Bakersfield to Palmdale	October 2018	July 2019	June 2020
Palmdale to Burbank	November 2018	December 2019	January 2021
Burbank to Los Angeles	November 2018	September 2019	June 2021
Los Angeles to Anaheim	November 2018	Late 2019/Early 2020	March 2021

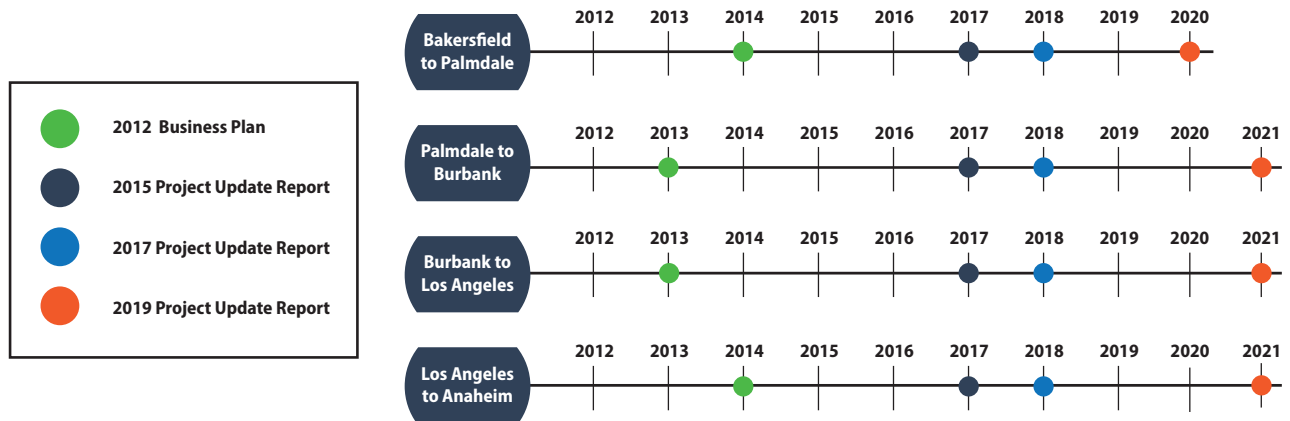
EXHIBIT 7.14: ESTIMATED RECORD OF DECISION (ROD) COMPLETION TIMELINE

Exhibit 7.14 shows the changes in the estimates for completing Records of Decision for the relevant project sections. Each estimate was discussed in the corresponding report identified in the legend.

Bookend Projects

Construction on the Rosecrans/Marquardt project is anticipated to start as early as 2021, and the project is targeted for completion in 2023.

The Authority will complete and execute the Subpart (d) Funding Plan and Project Management and Funding Agreement for the Link US or Los Angeles Union Station Run Through Track project. The Authority anticipates that these agreements will be signed prior to the submittal of the 2020 Business Plan to the Legislature.

Construction on these projects will begin before the Authority submits the 2021 Project Update Report to the Legislature.

Stations

The Authority continues to work with station communities along the Phase 1 high-speed rail route to complete station area plans. Station area planning involves local jurisdictions/joint powers, local governments, regional and local transit providers, and other interested parties that establish, relocate and provide transportation in their region.

Planning elements include parking strategies, streetscapes that promote walking, biking and transit use, finance plans, zoning for residential and commercial activities, and station place-making. Every station will be unique for each region; aligning community and high-speed operational needs to the goals for each station is a major collaborative effort.

TABLE 7.12: STATION AREA PLANNING DELIVERABLES - SOUTHERN CALIFORNIA REGION

Station Area Jurisdiction	Description	Partners	Completion Date
City of Palmdale	Station area plan	LA County, Metrolink, XpressWest	2022
City of Burbank	Station area plan	LA County, Metrolink, Airport	2022

The Authority has entered into agreements with governmental jurisdictions and transit providers to facilitate coordinated efforts to achieve successful city-regeneration opportunities and enable more sustainable, district-scale development and area circulation.

Table 7.12 summarizes the key milestones for completing existing agreements, and notes key partners involved in providing the necessary input.

Palmdale Multimodal Station

The Authority has collaborated with Palmdale to establish a Regional Coordinating Body and to support advancing research and analysis into network integration, zoning, development potential/real estate assessments and other elements of sustainable planning efforts.

Next steps include finalizing a station access, parking, and circulation study, financing and fiscal impact plans, and the Draft Station Access Plan and related EIR/EIS documents.

Burbank Multimodal Station

The Authority has collaborated with Burbank to establish a Regional Coordinating Body and to support advancing research and analysis into network integration, zoning, development potential/real estate assessments and other elements of sustainable planning efforts.

Next steps include finalizing a station access, parking, and circulation study, financing and fiscal impact plans, and the Draft Station Access Plan and related EIR/EIS documents.

Norwalk/Santa Fe Springs and Fullerton Multimodal Stations

The Authority is collaborating with Norwalk/Santa Fe Springs and Fullerton, along with Metrolink, LOSSAN and Amtrak, to protect these existing stations during the construction and operations of the high-speed rail system. The Authority is also focused on planning the infrastructure so that high-speed rail trains could also stop at these locations for additional connectivity to Los Angeles International Airport via Norwalk/Santa Fe Springs and to the Inland Empire via Fullerton.

The Authority plans to continue work with regional partners to advance the Southern California Association of Government's efforts on the Green Line Extension study, which was started recently.

Los Angeles Union Station

The Authority is working as a partner with Metro on the Link US project. Making use of the ARRA grant and its recognition of the importance of this facility to the future high-speed rail service, the Authority directed more than \$18 million to the planning and environmental clearance activities underway today.

The Authority is part of the Regional Coordinating Body that Metro established for work on this important project. The Authority actively supports research and analysis into network integration and future operations, while participating in discussions on zoning, development potential/real estate assessments and other elements of sustainable planning.

Next steps include completion of the EIR/EIS documents for the Link US project and high-speed rail project sections and completion of the funding agreement to direct the remaining SB 1029 bookend funds to begin construction on run-through tracks.

Anaheim Regional Transportation Intermodal Center (ARTIC)

Throughout planning, design and construction, the Authority collaborated with the City of Anaheim to support advancement of research and analysis into network integration, zoning, development potential/real estate assessments and other elements of sustainable planning.

Next steps include finalizing high-speed rail's plan to integrate service into the station and incorporation of associated station access, parking, circulation and related plans in the Draft EIR/EIS documents, which are planned for release in 2019/2020.

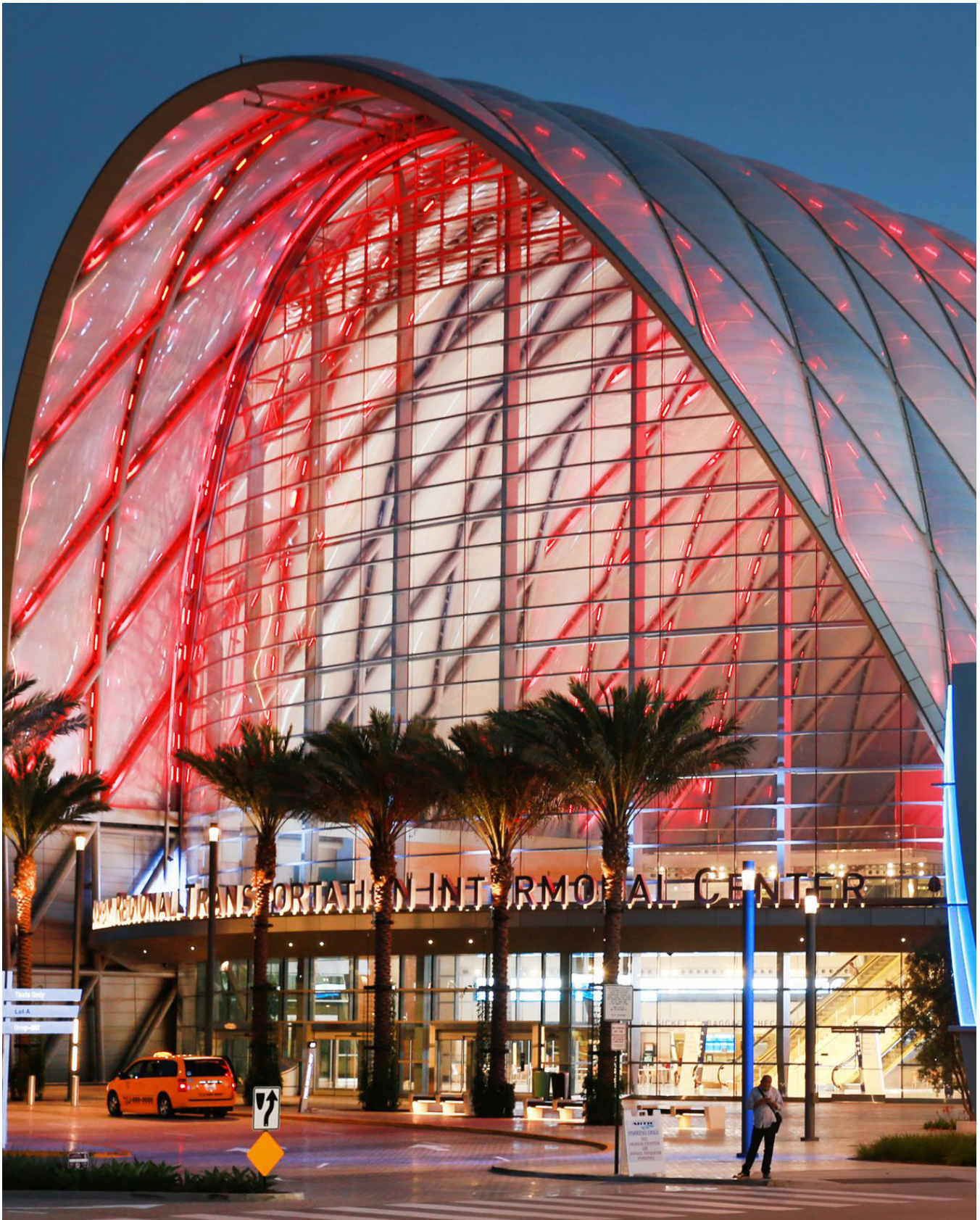


PHOTO: ANAHEIM REGIONAL TRANSPORTATION INTERMODAL CENTER (ARTIC)

Connectivity Projects

We continue to work with our state and regional partners to fulfill our commitment, as embodied in a 2012 MOU, to collaborate on and accelerate regionally significant concurrent investments in Southern California. These connectivity projects can be completed incrementally and provide significant near-term improvements that will benefit passenger, freight and auto traffic. They will also serve as building blocks for high-speed rail service in California.

Through this MOU, the Authority is working with its partners to leverage resources, secure new funding, identify and fund projects ready to move into construction (or advance others through

environmental clearance) and advance improvements as quickly as possible.

The Authority worked to achieve early approval and release of Proposition 1A connectivity dollars for construction of many regionally significant projects most notably in the heavily congested urban rail corridors in Southern California and is working to finalize the agreements required to achieve approval.

Progress on the investment of the connectivity funds is reported quarterly to the California Transportation Commission. **Table 7.13** summarizes the connectivity dollars appropriated by SB 1029 directed to significant safety, network integration, and key mobility building-block projects.

TABLE 7.13: SOUTHERN CALIFORNIA CONNECTIVITY PROJECTS' STATUS (DOLLARS IN MILLIONS)

Sponsor	Name	Funding	Project Completion Date
Southern California Regional Rail Authority	Positive Train Control	\$47	Completed
North County Transit District (San Onofre to San Diego)	Positive Train Control	\$24	December 2018
Caltrans	Los Angeles to Fullerton Triple Track	\$3	Completed
Southern California Regional Rail Authority (SCRRA)	Metrolink Positive Train Control	\$35	December 2018
Los Angeles County Metropolitan Transportation Authority	Regional Connector Transit Corridor	\$115	October 2021
Southern California Regional Rail Authority (SCRRA)	Metrolink High-Speed Rail Readiness Program	\$89	December 2019
San Diego Association of Governments	Blue Line Light Rail Improvements	\$58	Completed
North County Transit District	Positive Train Control	\$18	December 2018



APPENDICES

Statutory Requirements

Project Update Report

On or before March 1, 2017 and every two years thereafter, the Authority shall provide a project update report, approved by the Secretary of Transportation and consistent with the criteria in this section, to the budget committees and the appropriate policy committees of both houses of the Legislature, on the development and implementation of intercity high-speed train service pursuant to Section 185030. The report, at a minimum, shall include a program wide summary, as well as details by project section, with all information necessary to clearly describe the status of the project, including, but not limited to, all of the following:

- | | |
|---|--|
| (a) A summary describing the overall progress of the project. | expected to be reached in the coming two-year period. |
| (b) The baseline budget for all project phase costs, by segment or contract, beginning with the California High-Speed Rail Program Revised 2012 Business Plan. | (g) Any issues identified during the prior two-year period and actions taken to address those issues. |
| (c) The current and projected budget, by segment or contract, for all project phase costs. | (h) A thorough discussion of risks to the project and steps taken to mitigate those risks. |
| (d) Expenditures to date, by segment or contract, for all project phase costs. | Project update reports are required to be prepared biennially in odd-numbered years. The Authority is also required to prepare and submit business plans to the Legislature, also on a biennial basis, in even-numbered years. Together these fulfill the requirements of Government Code 16724.4 which relates to annual reporting requirements associated with voter approved bond measures. |
| (e) A comparison of the current and projected work schedule and the baseline schedule contained in the California High-Speed Rail Program Revised 2012 Business Plan. | |
| (f) A summary of milestones achieved during the prior two-year period and milestones | |

Statutory Requirements	Location in 2019 Project Update Report	Checkmark
A summary describing the overall progress of the project.	Chapter 7: Program and Regional Summaries	
The baseline budget for all project phase costs, by segment or contract, beginning with the California High-Speed Rail Program Revised 2012 Business Plan.	Chapter 2: Capital Cost Review; Chapter 7: Program and Regional Summaries	
The current and projected budget, by segment or contract, for all project phase costs	Chapter 2: Capital Cost Review; Chapter 7: Program and Regional Summaries	
Expenditures to date, by segment or contract, for all project phase costs.	Chapter 3: Funding and Affordability	
A comparison of the current and projected work schedule and the baseline schedule contained in the California High-Speed Rail Program Revised 2012 Business Plan.	Chapter 2: Capital Cost Review	
A summary of milestones achieved during the prior year and milestones expected to be reached in the coming year.	Chapter 7: Program and Regional Summaries	
Any issues identified during the prior two-year period and actions taken to address those issues	Chapter 5: Program Issues	
A thorough discussion of risks to the project and steps taken to mitigate those risks.	Chapter 6: Program Risk	

Correspondence

1. Letter from the Secretary of California State Transportation Agency, *April 22, 2019*
2. Letter to the Administrator, Federal Railroad Administration, *March 4, 2019*
3. Letter to the Director of the Office of Program Delivery, Federal Railroad Administration, *March 4, 2019*



Gavin Newsom
Governor

Brian C. Annis
Secretary

915 Capitol Mall, Suite 350B
Sacramento, CA 95814
916-323-5400
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April 22, 2019

Mr. Brian P. Kelly
Chief Executive Officer
California High-Speed Rail Authority (CHSRA)
770 L Street, Suite 620
Sacramento, CA 95814

Re: Early Interim Service on California High-Speed Rail Authority's Merced to Bakersfield Segment and
Statewide Rail Modernization

Dear Mr. Kelly:

This letter regards the California High-Speed Rail Authority's (CHSRA) proposed Early Interim Service on the Merced to Bakersfield Section as described in the 2019 Project Update Report (PUR), and the consistency of that proposed service with the 2018 California State Rail Plan and investments the California State Transportation Agency (CalSTA) is making in intercity and commuter rail. CalSTA has reviewed the service plan developed by the Early Train Operator and finds that plan would be fully consistent with the State Rail Plan and would significantly increase frequencies, speeds, and ridership for rail in the Central Valley, and ultimately the state.

Since 2013, CalSTA has been in active conversations on the topic of early service with CHSRA and other rail stakeholders, including the Federal Railroad Administration (FRA). Both the 2018 High-Speed Rail Business Plan and the 2018 California State Rail Plan pointed to the opportunity to improve statewide mobility through integrated statewide services that made initial use of completed infrastructure in the Central Valley. With the analysis completed by the Early Train Operator and reflected in the most recent PUR, the benefits of such action are clear.

This Agency, and our transportation partners have made a multi-billion-dollar commitment to continued rail modernization in the state. This effort includes more than \$1.3 billion in capital investments for the Altamont

Corridor Express (ACE) and San Joaquin services, primarily through the Valley Rail program, and more than \$1 billion in investment by 2025 to extend ACE services to both Sacramento and Merced, as well as adding new Amtrak San Joaquin services to the Merced/Sacramento and Merced/Oakland corridors – funding for this effort comes primarily through the Transit and Intercity Rail Capital Program (TIRCP) administered by CalSTA. In addition, the state is making additional investments through the 2018 State Transportation Improvement Program (STIP) in better stations and platforms in the corridor (over \$50 million) and, through FRA and Prop 1B funds, in 8 Tier IV Siemens Charger locomotives and 49 Siemens rail cars that will operate in the Amtrak San Joaquin corridor (an investment exceeding \$250 million). These improvements will be implemented to take advantage of the opportunity to run services that will integrate with each other in Merced, leading to significant ridership and revenue gains within the Central Valley and between the Central Valley and the Bay Area.

We are also in the midst of implementing additional improvements in Southern California that will provide an integrated Metrolink, Coaster and Amtrak Pacific Surfliner network, with significantly greater frequencies and the opportunity to provide much shorter bus connections between the Bakersfield area and the Northern San Fernando Valley, where connections to trains would occur instead of requiring travelers to ride buses through Southern California highway congestion all the way into Los Angeles Union Station. We are increasing frequencies to Orange County, San Diego, and up the Central Coast to Santa Barbara and beyond, and also supporting the growth in Metrolink and Coaster services that provide access to many additional stations.

The result of these funded improvements, along with CHSRA's proposed Early Interim Service, will be a statewide rail network with better overall performance, generating higher ridership and revenue for the money the state invests.

I look forward to seeing the continued progress of the high-speed rail project, as we collectively work to meet the mobility and greenhouse reduction needs of the state.

Sincerely,



BRIAN C. ANNIS

Secretary



March 4, 2019

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Brian P. Kelly
CHIEF EXECUTIVE OFFICER

GAVIN NEWSOM
GOVERNOR



Ronald L. Batory, Administrator
Federal Railroad Administration, West Building
1200 New Jersey Avenue, SE
Washington, DC 20590

Subject: Notice of Intent to Terminate Cooperative Agreement No. FR-HSR-0118-12-01-01

Dear Mr. Batory:

I write in response to your letter dated February 19, 2019, stating that the Federal Railroad Administration (FRA) intends to terminate Cooperative Agreement No. FR-HSR-0118-12-01-01 (FY10 Agreement or Agreement) and de-obligate the \$928,620,000 obligated under the Agreement. Per the direction in your letter, I have attached a comprehensive and formal response to the issues raised which, as requested, is directed to Ms. Jamie Rennert, FRA Director of Program Delivery.

There are two facts that should be emphasized at the outset. First, Governor Newsom is committed to building a transformative, visionary high-speed rail project in full compliance with federal grant requirements. Second, the California High Speed Rail Authority is making progress, and has met its commitments under its federal grant agreements.

Governor Newsom's recent public expression of support for delivering high-speed rail in California does not constitute a fundamental change in the purpose of the overall project for which federal funding was awarded. In fact, the Governor described a pragmatic approach to using the funding now committed to this project to get high-speed trains on the ground in California as soon as possible—by completing an early high-speed rail link operating in the Central Valley between Merced and Bakersfield; continuing our regional projects in the north and south; and finishing the required environmental clearances on all Phase 1 segments from

Ronald L. Batory

March 4, 2019

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San Francisco to Los Angeles/Anaheim. Laying this groundwork will enable us to ultimately connect a revitalized Central Valley to Silicon Valley and Southern California.

This approach ensures the assets we are constructing with federal funding have the maximum independent utility while we advance project development work elsewhere and pursue additional funding to complete the entire system. As the FRA has already agreed, this building-block approach is appropriate in a constrained funding scenario.

The Governor's proposal is wholly consistent with the concept for an early interim service that has been submitted to and reviewed by the FRA in 2013, 2014, and 2016. In fact, the Governor's approach would expand the initial construction segment selected by the FRA in 2010 to maximize interim ridership and regional connectivity. This is achieved by extending the route to connect urban centers (Merced-Fresno-Bakersfield) and to provide important transit connectivity to the Altamont Corridor Express (ACE) and Amtrak traveling to the Bay Area as well as Sacramento in the north and to bus services traveling from Bakersfield to Los Angeles in the south. A more detailed analysis and implementation plan is forthcoming in the Project Update Report we will submit to the California Legislature on May 1, 2019.

The Governor's proposal for high-speed rail's early operations in the Valley would be tangible and transformative for Californians. Importantly, it would not require any additional funding from the federal government. In other words, under our current funding plan, the State, not the federal government, will bear the cost of expansion to downtown Bakersfield and to Merced.

In support of this vision, the Authority is making measurable progress towards the objectives of the federal grant agreements. The history of our relationship is marked by effective collaboration between California and the FRA to advance the project. We have achieved progress by working together to constructively address challenges on the ground. Indeed, the funding agreements we have executed with you have been amended six times already to ensure we can achieve project objectives in the face of various challenges.

This kind of collaboration is valuable and must be maintained. Through this approach, we have:

- Advanced construction on the 119-mile segment selected for funding by the FRA in 2010 and 2011 so that:
- More than 2,600 workers in the Central Valley have gone to work constructing high-speed rail;
- 488 small businesses have worked on the project;

Ronald L. Batory

March 4, 2019

Page 3

- More than 20 construction sites are underway and 4 structures completed;
- State Route 99 realignment near Fresno has been built with over 1,750 craft laborers and 56 small businesses; and
- Nearly \$6 billion in economic output has been achieved.
- Met the federal statutory deadline for the expenditure of more than \$2.5 billion in federal funds appropriated by Congress and directed to this project;
- Progressed the environmental documents for the entire Phase 1 project from San Francisco-Los Angeles/ Anaheim so that we are on schedule to complete this work consistent with our federal grant agreement; and
- Improved our project controls (working with the FRA) to identify project risks that require active mitigation and management to limit impacts on cost, scope and schedule.

In light of this progress, I feel it is imperative to communicate directly to you that termination of the FY10 Agreement would be unwarranted, unprecedented, and harmful to the Project and to the people of the Central Valley, the State of California, and the nation.

Moreover, any “clawback” of federal funds already expended on this project would be disastrous policy. It is hard to imagine how your agency—or the taxpayers—might benefit from partially constructed assets sitting stranded in the Central Valley of California. It is equally difficult to imagine the policy benefit of sending home the more than 2,600 craft workers, men and women who have been dispatched to work on the 119-mile segment now under construction in the Central Valley, one of the nation’s most economically distressed regions. Similarly, there is no benefit to sending “stop work” notices to the 488 small businesses, 15 of which are from outside of California, contracted to work on this project. This infrastructure legacy would forever be a travesty.

There is a better way forward. Let’s restore the functional relationship between our agencies so progress on this project and the related economic benefits can continue, and the important environmental and mobility benefits can be realized at the earliest possible time.

The challenges we confront today are not new, nor are they caused by unilateral decisions by the Authority. They are the product of joint decisions made by our agencies over many years. Where this project commenced construction was determined by the FRA through its grant awards in 2010 and 2011.

Ronald L. Batory

March 4, 2019

Page 4

The timing of executing construction contracts and even the groundbreaking for the project involved the full participation and approval of the FRA. The recent decision to hold back federal participation in our joint environmental review process—negatively affecting the project schedule—was made by the FRA.

While the challenges are not new, overcoming them does require doing business differently—here and at the FRA. Toward that end, Governor Newsom implemented governance changes and ordered enhanced transparency measures so taxpayers, policymakers and our partners (including the FRA) can easily see how public dollars are being spent and how the project is progressing. My board fully supports this direction, and we have started implementing enhanced transparency measures like new quarterly reporting to the Legislature and greater public access to project documents available online. We have also been working with FRA staff to improve project controls, so we can jointly measure, monitor and mitigate project risks. Continuing this work together is essential to avoid repeating mistakes of the past.

You and I, in our respective jobs for just over a year now, live with the implications of prior decisions. Nevertheless, we continue to make progress in the face of complex challenges. This Authority and your agency are closer than we ever have been on a shared perspective of the project risks that must be managed to be successful.

I am committed to successfully managing those risks, and I am requesting your partnership to do so. I respectfully ask that you do not terminate the Cooperative Agreement, but instead, as the attachment details, join me to lead our agencies in a structured process to share facts, clarify misunderstandings, and resolve disagreements.

Our goal here should be the successful delivery of America's first truly high-speed rail service. You have California's commitment to engage in good faith and get this important work done.

Thank you for your consideration.

Respectfully,



Brian P. Kelly
Chief Executive Officer



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Brian P. Kelly
CHIEF EXECUTIVE OFFICER

GAVIN NEWSOM
GOVERNOR



March 4, 2019

Ms. Jamie Rennert
Director, Office of Program Delivery
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Subject: Notice of Intent to Terminate Cooperative Agreement No. FR-HSR-0118-12-01-01

Dear Ms. Rennert:

I am responding on behalf of the California High-Speed Rail Authority (“CHSRA”) to Ronald Batory’s February 19, 2019 notification that the Federal Railroad Administration (“FRA”) intends to terminate Cooperative Agreement No. FR-HSR-0118-12-01-01 (“FY10 Agreement” or “Agreement”) and de-obligate the \$928,620,000 obligated under the Agreement effective March 5, 2019.

I urge the FRA to reconsider the precipitous and unjustified action it is contemplating. Termination of the FY10 Agreement would be unwarranted, unprecedented, and legally indefensible, and it would gravely harm a historic project on which the FRA and the CHSRA have collaborated productively for nearly a decade.

As detailed below, the CHSRA is meeting its commitments under the FY10 Agreement and Cooperative Agreement No. FR-HSR-0009-10-01-06 (the “ARRA Agreement”). The CHSRA is making reasonable progress on the Project¹. And, far from abandoning the ultimate vision of a California high-speed rail system running from northern to southern California, Governor Newsom is proposing billions of dollars in additional state funding to expand the initial construction project in the Central Valley required by the ARRA

Agreement. This expanded system will connect three of the largest cities in the

¹ Unless otherwise indicated by context, “Project” refers to Tasks 1 through 10 listed in the FY10 Agreement and the ARRA Agreement.

Ms. Jamie Rennart

March 4, 2019

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Central Valley (Merced, Fresno, and Bakersfield), providing service to millions of individuals and transforming the economy of one of the nation's most economically distressed regions, as well as providing important transit connectivity to Los Angeles, the Bay Area, and Sacramento. The threatened termination of funding, by contrast, would cause massive disruption, dislocation, and waste, damaging the region and endangering the future of high-speed rail in California and elsewhere in the nation.

Accordingly, the FRA should reconsider the rash and unlawful action it is contemplating and instead engage in reasoned and structured discussion with the CHSRA of its concerns. The FRA's threat to terminate funding under the FY10 Agreement on two weeks' notice is a sharp departure from the productive, collaborative relationship previously enjoyed by the FRA and the CHSRA. In light of that relationship, and the disruption and waste that abrupt termination of the

Agreement would cause, we owe it to the residents of the Central Valley, state and federal taxpayers, and the nation as a whole to continue cooperating on our historic and transformative high-speed rail project.

EXECUTIVE SUMMARY

The February 19, 2019 notification letter from Mr. Batory (the "Notice") asserts that the CHSRA has materially breached the FY10 Agreement based on four factors. But none of the conduct identified by the Notice constitutes a material breach of the Agreement, and the Notice's assertions of additional unidentified breaches are contradicted by the FRA's previous acknowledgements that the CHSRA has been complying with the essentially identical terms of the ARRA Agreement.

For example, although the Notice asserts that the CHSRA has failed to make required expenditures, the only shortfall that it identifies is the failure to meet projected design and construction expenditures in December 2018. Deviations from projected expenditures are, however, routine in any large construction project, and nothing in the FY10 Agreement makes such a deviation a breach, much less a material one.

Moreover, far from asserting any prior material breaches, the FRA repeatedly has acknowledged that the CHSRA was complying with its obligations. Under the ARRA Agreement, the FRA was permitted to release funds only if the CHSRA was complying with the Agreement. Nevertheless, the FRA released all the ARRA funds, making over 450 separate payments to the CHSRA from March 2011 to September 2017, when the account closed, thereby acknowledging the CHSRA's compliance with its spending (and other) obligations.

The Notice's other assertions of non-compliance are similarly unsupported. While the Notice concludes that the CHSRA will not complete the Project by the end of 2022, the only documents cited in support of this conclusion expressly state that the Project will be completed by then. Even more fundamentally, the Notice does not point to any "time is of the essence" clause or other provision in the Agreement making completion by 2022 material.

Ms. Jamie Rennart

March 4, 2019

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The Notice similarly fails to identify any specific deliverables that the CHSRA has failed to satisfy, much less to explain why such failures would be material and cannot be cured. Finally, contrary to the Notice's assertion, the CHSRA has not failed to take any corrective action required by the FRA: indeed, the FRA has notified the CHSRA of only one corrective action, which the CHSRA completed.

The Notice also asserts that the CHSRA has failed to make reasonable progress on the Project. Here again, the Notice's assertion is belied by the FRA's prior conduct. In addition to prohibiting the release of funds absent compliance, the ARRA Agreement prohibited the release of funds unless the CHSRA was making adequate and timely progress. As a consequence, when FRA released funds under that Agreement from March 2011 through September 2017, it necessarily acknowledged that the CHSRA was making reasonable progress. Moreover, nothing in the Notice suggests that the CHSRA has stopped doing so. To the contrary, in the last year the CHSRA has made important progress in completing the Project. Indeed, there are now 24 active or completed construction sites in the Central Valley, employing more than 2,600 workers, who are realigning roads and utilities, building bridges, viaducts, and crossings, as well as grading roads and constructing embankments.

California has not changed the overall purpose of its High-Speed Rail Plan, nor has it frustrated the purpose of the Agreement. To the contrary, Governor Newsom has reiterated his support for the vision of his predecessors. He is, however, focused on completing the current project in the Central Valley and maximizing the benefits of that project. Far from frustrating the purpose of the Agreement, he is proposing to expand the construction contemplated by the Agreement so that the first building block of the high-speed rail program will bring the benefits of high-speed rail to three of the largest cities in the Central Valley and three of the fastest growing counties in California.

The threatened termination of the FY10 Agreement on two weeks' notice is a sharp and wasteful departure from the FRA's fruitful collaboration with the CHSRA, which is necessary to complete any large infrastructure project. If this abrupt termination occurs, the FRA will not only endanger the historic project on which it has collaborated for nearly a decade; it also will set a troubling precedent that may undermine future infrastructure projects funded through state-federal partnerships. Accordingly, the CHSRA urges the FRA to reconsider its contemplated action or, at a minimum, to engage in structured discussions to share facts, clarify misunderstandings, and resolve disagreements.

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DISCUSSION

I. THE CSHRA HAS NOT MATERIALLY BREACHED THE FY10 AGREEMENT

The Notice asserts that the CHSRA has materially breached the terms of the FY10 Agreement based on four specified factors². The Notice, however, fails to identify any material breaches and thus fails to provide any legitimate ground for terminating the Agreement for non-compliance.

A. The CHSRA has Committed and Spent More Than Sufficient State Funds for the Project

The first factor specified in the Notice is the failure to make required State expenditures. The Notice, however, identifies only one specific shortfall: the CHSRA's expenditure of \$47.9 million rather than the \$141.8 million projected on final design and construction in December 2018. It is true that the last quarterly Funding Contribution Plan projected design and construction expenditures of \$141.8 million in December 2018, and that only \$47.9 million was actually spent. But nothing in the FY10 Agreement required a \$141.8 million expenditure in December 2018 or that the CHSRA meet its expenditure projections each month.

Projections are just estimates for a given period. A deviation from such estimates is not a material breach. In any civil infrastructure project, the exact pace of the final design and construction activities varies over the duration of the project. If the projected progress in one month does not match the actual progress, the pace of the progress in subsequent months can be accelerated. This is especially true with delays early in a project when critical path items are being constructed because such delays may delay the commencement of others. But later noncritical path items can be accelerated to make up for the lost time and bring the project back on schedule.

The Notice's assertion that the current pace of state expenditures breaches the FY10 Agreement is also puzzling because CHSRA is not yet making expenditures under the FY10 Agreement. The FY10 Agreement funds the final set of tasks needed to complete the Project. The rest of the funding for the Project is being provided by the State and by the ARRA Agreement. Although the federal money granted under the ARRA Agreement was exhausted in September 2017, when the ARRA appropriation account closed, the CHSRA is still in the process of spending \$2.5 billion in matching state funds under the ARRA Agreement.

Far from finding that the State materially breached the terms of the ARRA Agreement, the FRA repeatedly has recognized the CHSRA's compliance with that agreement. Under Section 7(b) of the General Provisions in Attachment 2 of the ARRA Agreement, the FRA may authorize release of funds only if it receives adequate documentation of a cost and the CHSRA is "complying with its obligations" under the ARRA Agreement.

² The Notice states that the FRA's assertion of material breach is based on "many" factors, but only identifies four areas of noncompliance. The CHSRA cannot respond to allegations concerning factors that have not been identified, and it would be fundamentally unfair for the FRA to terminate the Agreement based on factors that it has not given the CHSRA a chance either to contest or to cure.

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Pursuant to this provision, the FRA made over 450 separate payments to CHSRA from March 2011 through September 2017, thereby acknowledging that the CHSRA has been complying with its obligations.

Moreover, California is well ahead of schedule in meeting its matching obligation under the ARRA Agreement. As of December 2018, the CHSRA has submitted for FRA approval \$970 million in state matching funds, which is 39% of California's \$2.5 billion match requirement. As only 26% of the period for achieving this match has expired, California is plainly on track to meet its state match funding obligation under the ARRA Agreement. Furthermore, in 2018 the CHSRA committed an additional \$3.1 billion in state funding toward the Project, which would result in a total State contribution of 71% of the Project's cost. Thus, the State has committed to more than its fair share of the Project, and there has been no breach of the State's spending obligations.

B. The CHSRA Remains Committed to Completing the Project by December 31, 2022

The second factor identified by the Notice is that the CHSRA will not complete the Project by December 31, 2022. Here again, the facts identified by the Notice fall short.

The Notice asserts that the FRA's evaluation of various documents shows that the CHSRA cannot complete the Project by the end of 2022. But the only documents that the Notice identifies are CHSRA's Fourth Quarter 2018 Summary Schedule and its February 2019 Finance and Audit Committee reports. Far from showing that the Project will not be completed by 2022, the Fourth Quarter 2018 Summary Schedule shows that most work on the Project will be completed by March 2022 and the four final tasks by the end of that year. The Notice's reliance on the 2019 Finance and Audit Committee Reports is equally misplaced. According to the monthly report that the committee received this February, the construction packages in the Central Valley will be completed by December 31, 2020, August 31, 2021, March 31, 2022, and December 31, 2022.

Completing these packages on this schedule will be challenging. But as most recently outlined at the February 19, 2019 Finance and Audit Committee meeting with the public in attendance, the CHSRA acknowledges the risks to the project schedule that must be monitored and mitigated to keep the Project on track. The Authority is therefore implementing strategies to meet those challenges, and its Chief Operating Officer has set out the construction expenditure plan required to meet the December 31, 2022 deadline as well as creating cross-functional Strike Teams to clear project work sites, establishing teams to resolve commercial contractor charges and claims, and appointing an Executive COO and a Deputy COO focused solely on increasing construction productivity. The Notice does not—and cannot—explain why despite these actions the CHSRA cannot complete the Project by the end of 2022.

The FRA also notes one report submitted to the CHSRA's Finance and Audit Committee shows that a contractor has expended only 25.1% of a contract price even though 86.5% of the contract period has elapsed. But this report concerns "Construction Package 4," which is just one of four contract packages. The Notice

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offers no reason to believe that a delay in the completion of this one aspect of the Project will prevent completion of the overall Project by December 31, 2022, which is still more than three years away. Indeed, as the FRA knows, the CHSRA has been in active negotiations to correct the completion date for that contract package consistent with completion of the overall Project by the end of 2022.

Even more fundamentally, the Notice does not explain why a delay in completion of the overall Project would constitute a material breach of the FY10 Agreement. The Agreement contains no “time is of the essence” provision. Nor does the Agreement’s termination provision state that failure to achieve 100% completion by the end of 2022 constitutes grounds for termination. To the contrary, Section 23.c of the General Provisions in Attachment 2 of the Agreement states that “[e]xpiration of any Project time period established for this Project does not, by itself, constitute an expiration or termination of this Agreement.”

It is also surprising to us that the FRA is now finding the Project hopelessly and fatally delayed, because the agency has refused for nearly a year to take simple actions that would accelerate the Project. In June 2018, the CHSRA applied to conduct environmental reviews under the National Environment Policy Act concurrent with our robust state environmental review process. As staff at the United States Department of Transportation as well as the FRA have acknowledged, this simple measure would save months in project review (as well as millions of dollars in redundant expenses). Nevertheless, the FRA has not acted on our application, and, to make matters worse, since last August it has failed to conduct even the most routine review and approval of documents necessary to advance the environmental clearance process. The FRA should not point to delays, assert that future deadlines will be missed, and abandon the Project when it has failed to take simple steps to reduce delays.

The need to amend an interim schedule does not suggest or establish that a project cannot be completed or that its ultimate value will be diminished, and it certainly provides no reason to terminate the FRA’s participation in a multi-billion-dollar project. The FRA should be working with the CHSRA on ways to limit those delays and expedite completion of the Project. Large design-build public transportation projects encounter scores of challenges and therefore require persistence, creativity, and inter-agency cooperation.

C. The CHSRA Is Meeting Its Obligations to Submit Deliverables

The Notice asserts that the CHSRA has failed to submit “critical grant deliverables,” including Funding Contribution Plans. In particular, it asserts that the FRA has found over 40 reports and deliverables either delinquent or lacking sufficient information. This is the first time that the FRA has identified deliverables as an issue so major that it might justify termination of the FY10 Agreement, and because the Notice fails to identify any particular report or deliverable, much less the deficiency in it, the CHSRA is not in a position to respond fully to this concern at this time. Nonetheless, it is clear that these asserted deficiencies do not justify termination of the Agreement.

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First, a lack of sufficient information in deliverables is no basis for declaring a material breach, much less termination, because such deficiencies are obviously curable.

Second, while the Notice asserts that the FRA has found 40 reports and deliverables deficient since 2016, the FRA previously recognized that there were no material deficiencies before September 2017. As noted above, until the ARRA Agreement funds were exhausted in September 2017, the FRA approved payments under that agreement, thereby acknowledging that CHSRA was in compliance with the agreement. As the deliverables under the ARRA Agreement overlap with those under the FY10 Agreement, there could not have been any material breach of the latter concerning deliverables prior to September 2017. Moreover, nothing in the Notice suggests that any deficiencies since that time are any different in kind or number than those before.

Third, the CHSRA has made substantial submissions to the FRA. In total, it has delivered to the FRA 121 documents and plans specifically identified in the Agreements, including detailed reports, environmental documents, design plans, and other plans. The CHSRA is unaware of any deliverables that have not been submitted other than four that were due at the end of last year, which the CHSRA has been unable to deliver because of the government shutdown and the FRA's subsequent delay in providing routine guidance concerning the content of those documents requested by the CHSRA.

While some other deliverables have been delayed, many of the delays were also attributable to the FRA. For example, environmental deliverables were delayed when the FRA ceased all work on environmental approvals pending resolution to the CHSRA's NEPA Assignment request. Other deliverables, such as the Interim Service Development Plan, were delayed while the CHSRA awaited guidance on the content of those documents, and still others such as the Program Management Plan were delayed because the FRA changed the guidance it provided or requested additional information. Because the Notice fails to identify the deliverables it contends were deficient, it is impossible to say how many of the deficiencies asserted by the FRA are attributable to its own action or inaction.

D. The CHSRA Has Not Failed to Take Corrective Actions or Respond to The FRA's Monitoring

Finally, the Notice asserts that the CHSRA has consistently failed to take appropriate corrective action. That is simply false. Under the procedures established by the FRA, if the FRA determines that a corrective action is required, it is supposed to issue a finding and a notice of the corrective actions required, usually in its monitoring reports. The FRA has issued only one such finding and notice under the ARRA and FY10 Agreements. That was in a 2014 review related to the CHSRA's oversight of a contractor's compliance with permit requirements, and the CHSRA promptly implemented a corrective action plan, which resolved the matter.

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The FRA's own reports confirm that, contrary to the Notice's suggestion, the CHSRA has not failed to take corrective actions. The last monitoring report CHSRA received from the FRA was dated February 12, 2018, and the summary table of items requiring corrective action in the report is empty.

The Notice asserts that the FRA identified areas of interest in the 2017 annual monitoring review, which the CHSRA failed to satisfactorily address. This does not support the Notice's assertion that the CHSRA has failed to take corrective actions because the FRA never notified the CHSRA that corrective action was required.

Moreover, contrary to the Notice's suggestion, the CHSRA has spent considerable time and effort responding to issues raised in the FRA's annual monitoring reviews. Indeed, every year the FRA and the CHSRA conduct a Site Monitoring Review, which includes a one-day site review at the CHSRA's Sacramento headquarters office and three days in the Central Valley reviewing each construction package (this includes a one-day site tour of the construction packages). This week-long review covers multiple topics and involves every aspect of the program from grant management to construction oversight, providing the CHSRA and the FRA an opportunity to review issues that have arisen over the year and ongoing future needs and concerns. There has never been a suggestion before that the CHSRA fails to address the issues raised by the FRA or has failed to satisfactorily address them.

The Notice offers only one example of a supposed failure to respond to its monitoring: the CHSRA, it asserts, has not developed "realistic Project Schedules and budgets based on past performance and trends." In fact, however, the CHSRA has made extensive efforts to update and improve its scheduling and budgeting process. For example, in June 2018, as part of its business plan process, the CHSRA completed an updated baseline cost estimate and budget to complete the work underway, an updated schedule for completion, and an implementation plan for passenger service and completion of the federal grant agreement.

In addition, numerous examples of the CHSRA responding to the FRA concerns can be cited. For example:

- ***Staff Capability and Capacity***—In response to the FRA's suggestion that the CHSRA reorganize staff to facilitate project delivery and fill key positions with project delivery experts, in August 2017, the CHSRA created a new Program Delivery Office, restructured to focus on program delivery and made improvements in its governance and decision-making structure to improve internal communications.
- ***Internal Processes***—In response to the FRA's suggestion to implement a control system addressing Program Management Plan requirements, the CHSRA established a Program Management and Oversight branch and implemented a more formalized process of configuration management and change control.
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- ***Service Development Planning***—In response to the FRA’s suggestion that the CHSRA explain the independent utility of the Central Valley portion of the high-speed rail program, the CHSRA contracted with an Early Train Operator consultant, which evaluated different service options, including a Merced to Bakersfield approach, that were discussed in the CHSRA’s 2018 Business Plan and will be discussed further in a report to the Legislature in May 2019.
- ***Right-of-Way Acquisitions***—In response to the FRA’s suggestion to increase the pace of right-of-way acquisitions, the CHSRA stepped up its acquisitions so, for example, acquisitions for Construction Package 4, increased from 39% complete in 2017 to 80% by December 2018. For all Construction Packages, 74% of the property needed has been delivered to the design-build contractors.

Here again, the Notice has failed to show any material breach of the terms of the FY10 Agreement that could justify termination of the Project.

II. THE CHSRA IS MAKING REASONABLE PROGRESS ON THE PROJECT

In addition to asserting that the CHSRA materially breached its commitments and obligations under the Agreement, the Notice contends that the CHSRA is not making reasonable progress on the Project. That is also wrong.

Since the CHSRA has not yet accessed FY10 Agreement funding as it spends down the required State matching dollars, progress must be measured against the ARRA Agreement. In releasing funds under the ARRA Agreement, however, the FRA has acknowledged that the CHSRA has been making reasonable progress. In addition to prohibiting payments absent compliance, the ARRA Agreement prohibited payments unless the CHSRA was “making adequate and timely progress toward Project completion.” As the FRA made over 450 payments under the ARRA Agreement from March 2011 through September 2017, the CHSRA must have been making adequate progress into at least the third quarter of 2017.

Nothing in the Notice shows that progress has materially stalled since then. To the contrary, CHSRA has continued to make substantial progress. Indeed, at this point:

- 90% of the design work on the Project has been completed, and 74% of the rights of way have been delivered to the CHSRA’s contractors;
- There are more than 24 active or completed construction sites in the Central Valley;
- State Route 99 has been realigned, and the realignment of other roads as well as utilities is in progress;

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- Two overhead crossings, a bridge, and a viaduct have been completed; two other viaducts as well as a trench in Fresno are in progress; and abutments for bridges and ponds are being constructed;
- Over 44 miles of grading and embankment work is either finished or in progress; and
- In total, the Project has employed more than 2,600 workers in the Central Valley, involved 488 small businesses, and achieved nearly \$6 billion in economic output.

Overall, the CHSRA has made significant progress on multiple sections in the Central Valley portion of the high-speed rail program concurrently to more quickly deliver statewide mobility and environmental benefits. In light of these significant and visible achievements, it is critical for both the FRA and the CHSRA, as stewards of the significant taxpayer funds invested so far, to complete the Project. Otherwise, we risk both failure and the unthinkable abandonment of a partially completed Project that would not be fit for the purpose for which the taxpayers have made this investment.

III. CALIFORNIA HAS NOT CHANGED THE OVERALL PURPOSE OF THE HIGH-SPEED RAIL SYSTEM

The Notice's final objection is that Governor Newsom, in his recent State of the State Address, changed the overall goal for High-Speed Rail in California and made a proposal that frustrates the purpose for which federal funding was awarded. Nothing could be further from the truth.

In his State of the State Address, Governor Newsom expressly confirmed that he shares that ambitious vision for high-speed rail of his predecessors Governors Brown and Schwarzenegger. Moreover, as I made clear in a recent memorandum to the chairman of the High-Speed Rail Authority, the Authority's ultimate goal remains a high-speed rail system that connects San Francisco to Los Angeles/Anaheim and that eventually will reach north to Sacramento and south to San Diego. The Governor merely identified a pragmatic, near-term focus, which is to "get trains on the ground" in the Central Valley and to lay the foundation for the San Francisco to Los Angeles/Anaheim service. Like all mega-infrastructure projects, the California high-speed rail system will be completed in building blocks with each block placed in service upon completion with future funding and construction eventually expanding the system to its ultimate extent.

Far from frustrating the purpose of the FY10 and ARRA grants, the Governor's focus expands that purpose and maximizes the utility of the first building block in the high-speed rail program. These grants are for construction of the initial portion of the high-speed rail system, and they require the CHSRA to construct a 119-mile segment from Poplar Avenue, approximately 15 miles north of Bakersfield, to Madera. Governor Newsom is proposing to expand this project by 50 miles—with California bearing the expense of doing so—to reach south into downtown

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Bakersfield and north to Merced, so that this initial segment will connect three of the largest cities in the Central Valley (Merced, Fresno, and Bakersfield), three major universities and three of the fastest growing California counties, as well as providing important transit connectivity to the Altamont Corridor Express (ACE) and Amtrak traveling to the Bay Area and Sacramento and to bus services traveling from Bakersfield to Los Angeles.

This expansion will make the initial building block of the high-speed rail program more immediately productive, which furthers, rather than frustrates, the purpose of the federal grants. The expanded Central Valley project also furthers the ultimate goal of a statewide high-speed rail system by ensuring that the first step in California's high-speed rail system brings tangible benefits that will encourage extension to the San Francisco Bay area and then to the Los Angeles basin.

IV. THE THREATENED TERMINATION OF THE FY10 AGREEMENT IS A SHARP AND UNFORTUNATE DEPARTURE FROM PRIOR PRACTICE

In addition to being unjustified, the FRA's sudden threat to end the Project on two weeks' notice is a sharp—and wasteful—departure from its fruitful collaboration until now with the CHSRA.

For nearly a decade, the CHSRA and the FRA have been working together toward our common goal of achieving the first true high-speed rail system in the United States. A project of this magnitude faces challenges at every stage, from planning, funding, environmental review, and acquisition of private property to the physical challenges of construction that cannot be fully predicted or addressed until dirt is actually moved. Consequently, the cooperation and, at times, patience of numerous agencies and municipalities is required. Until now, the CHSRA and the FRA have enjoyed such cooperation including, among other things, amending the ARRA Agreement six times to accommodate various changes.

Together, the agencies have overcome numerous hurdles since the original execution of the grant agreements in 2010 and 2011. For example, in 2012, after litigation challenging the Project was filed, the FRA and the CHSRA renegotiated the ARRA grant terms to allow a tapered match payment arrangement whereby the federal ARRA funds would be used first to pay for capital costs until fully expended, which occurred in September 2017, followed by state match until the full match amount is spent. Similarly, in late 2013, as the same litigation was on appeal, the FRA and the CHSRA mutually agreed to slow down the project construction, pending the results of the appeal or access to alternative state matching funds. And the FRA and the CHSRA continued to cooperate under a tapered match arrangement to assure the full use of the federal ARRA funds prior to the September 2017 statutory deadline.

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While much remains to be done, we are proud of the progress we have made. Terminating the FY10 Agreement now, especially without providing the CHSRA a fair and reasonable opportunity to be heard, would have grave consequences. Especially if paired with the clawback that the Notice threatens, termination would create uncertainty over the future of a project that has created 2,600 jobs in the Central Valley, a region that has struggled economically, and ultimately may leave that area strewn with unfinished bridges, overpasses, and viaducts.

This termination, should it go forward, also would set a troubling precedent that would undermine future infrastructure projects nationwide. Especially given the precipitous manner in which termination and withdrawal of funds has been threatened, the termination would cast doubt on the reliability of the federal government as a partner in delivering on its funding commitments. As a result, states may be unwilling to join the federal government in investing billions of dollars on future infrastructure projects, leaving the federal government with the unenviable choice of funding those projects itself or leaving them undone.

I urge the FRA and the Federal Government to focus on the important goal we have set together for California and the rest of the nation: to complete the first building block of a statewide high-speed rail system. That goal was established in partnership with the FRA in 2010 and 2011 when the ARRA and FY10 grant funds were awarded. Since that time, California has appropriated matching state funds, including Proposition 1A and Greenhouse Gas Reduction funds. Thus, based on the best available estimates the state and federal funds needed to satisfy capital costs to complete Central Valley construction, including right of way acquisition, construction management, environmental mitigation, final design, construction, and interim service, have all been committed or identified. Moreover, extensive construction is already underway. The FRA should not step away and waste all of these efforts.

At a minimum, in light of the massive disruption and waste that an abrupt termination would cause, I ask the FRA to agree to engage in a sincere effort to work through the issues raised in the Notice and save the nearly decade of collaboration on our historic high-speed rail project. Before any precipitous and potentially irreparable action is taken, the FRA should specify the deficiencies that the Notice only vaguely references and give the CHSRA an opportunity to respond to them individually and, where justified and still live, to discuss ways in which to cure or mitigate them. We also should engage in a meaningful discussion of how such issues may be cured in a more prompt and productive fashion without endangering a multibillion dollar project employing thousands of workers. And, finally, before concluding that the Project cannot be completed and abandoning it, the FRA officials should come to California and inspect the Project so that they can see for themselves both the great progress that has been made and the devastating harm that abandoning the Project at this stage would cause.

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Please contact us so that we can begin to make these arrangements as soon as possible and remove any cloud over the Project. We owe it to taxpayers to continue our cooperation on this historic endeavor and to act in good faith as stewards of the funds spent and to be spent in the Agreement.

CONCLUSION

Based on the above, I urge the FRA to decide that the FY10 Agreement should not be terminated or, at a minimum, that it defer any final termination decision and meet constructively with the CHSRA to resolve any and all issues of concern and preserve the historic Project on which we have cooperated for so long.

Thank you for your consideration.

Respectfully,

A handwritten signature in black ink, appearing to read "Brian P. Kelly". The signature is fluid and cursive, with the first name "Brian" being more prominent.

Brian P. Kelly

Chief Executive Officer



CALIFORNIA
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